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ABSTRACT

This practicum was designed to enable teachers in an elementary school to gain the skills required to utilize technological equipment and materials in their classrooms. The primary objective was that teachers would become proficient in the use of technology in their teaching. A second goal was that teachers would use technology to vitalize teaching in the major curriculum areas of reading and mathematics, and in selected other curriculum areas including social studies and science. A series of five hands-on staff development workshops in instructional technology were conducted and teachers in grades three through five were observed in their classrooms using technology in a range of subject areas from reading and mathematics to art and music. These teachers were asked to prepare long range plans in which they specify the extent to which they planned to utilize The results of the practicum were positive. Classroom observations revealed that teachers who attended the workshops were able to utilize technology appropriately and effectively in their lessons. Examination of teachers' long range plans revealed an overall increase in their decisions to employ educational technology in their teaching. (Author/GL)

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Vitalizing Instruction in the Middle Grades Through
Staff Development in Technological Methodology..

by

Agnes A. Violenus

Cluster 26-B

A Practicum I Report Presented to the Ed.D. Program
in Early and Middle Childhood
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA UNIVERSITY

1989

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Abstract

Vitalizing Instruction in the Middle Grades through Staff Development in Technological Methodology. Violenus, Agnes A., 1988: Practicum Report, Nova University, Ed.D. Program in Early and Middle Childhood. Descriptors: Teacher Workshops/In-service Teacher Education/Professional Development/Teaching Methods/Attitude Change/Educational Change/Scientific Attitudes/Multi-media Instruction/Educational Technology/Education Media/Appropriate Technology

This practicum was designed to enable the teachers of the middle grades in an elementary school to gain the skills needed to utilize technological equipment and materials in their classrooms. The primary objective was that teachers would become proficient in the use of appropriate technology in their teaching methodology. A second goal was that teachers would use technology to vitalize the learnings in the major curriculum areas of reading and mathematics, and in selected other curriculum area including social studies and science.

The writer conducted a series of five hands-on staff development workshops in instructional technology. The writer then observed teachers in Grades 3 through Grade 5 in their classrooms using technology to vitalize instruction in a range of subject areas from reading and mathematics to art and music. Finally, these teachers of middle grades prepared long range plans in which they specified the extent to which they planned to utilize technology in their teaching through the end of the school term.

The results of the practicum were positive. Classroom observations conducted by the writer revealed that teachers who attended the workshops were able to present lessons in which they utilized technology appropriately and effectively. Examination of teachers' long range plans revealed an overall increase and improvement in teachers' decisions to vitalize and enrich their methods of teaching through use of educational technology.

CHAPTER I

INTRODUCTION

Description of the Community

The practicum was conducted in a 50-year-old public elementary school in a predominantly Black and Latino inner-city community. The neighborhood is one of the most historic in the city, with many old brownstones, formerly the homes of well-to-do white residents. Most are still in use, but are now in rather poor condition although a few have been quite nicely renovated. There are also very many well-constructed apartment houses, built in the 'twenties and 'thirties, with a few still visible signs of once quite elegant exteriors and entryways, high-ceiling, multi-room apartments, and fine, intricate woodwork and plastering in the interiors. Then there are the tenements, many now abandoned or in very poor condition with well-publicized citations against absentee landlords for faulty heating and other evidences of serious neglect of these half-century or more old buildings. Additionally, there is more recent housing in the form of the public 'projects'. These are towers erected in the building boom after World War II and designed to house hundreds of families.

This is the variety of housing available to families of the children attending the school. For the most part most of the children live in the immediate neighborhood just described. The special

education children and the students in the retarded young adults unit are brought to the school daily by bus. However, most of these students are also coming from other parts of the city very similar to this. From this it may be seen that the parents and children of the school face serious housing difficulties. This is reflected in the high absenteeism, low personal self-esteem, and difficult in-school adjustments that are the part of the daily routine of many children in the school.

Although the city as a whole enjoys international renown as one of the most important cultural capitals of the world, the children seldom have any out-of-school exposure to opera, theater, spectator sports, museums, or the like. The children are not even encouraged to frequent the parks or playgrounds in the area because of the possibility of danger, and there is only one public library within a twenty-five block area. Informal enquiries reveal that for many children, the only diversion is television.

In contrast to this, almost all of the faculty, including paraprofessionals and school aides, live at extensive distances from the school; a few even live out-of-state. Many of the faculty live in one or two-family homes; others in high-rise apartment buildings designed for middle or upper-middle income levels. Only one teacher lives in the immediate neighborhood, in one of the recently renovated brownstones. One of the special education supervisors lives in a newly-constructed, high-rise, high-priced luxury condominium apartment house a few blocks from the school. This building opened a few months ago, and is designed to be in the vanguard of major up-scaling of the

neighborhood scheduled to be completed within the next decade. One of the chief concerns of the community is the probability that this extensive rebuilding of the area, although very much needed, will not benefit the current residents, most of whom earn very low incomes or are on public assistance. The projected rental levels, both for housing and for businesses, preclude the possibility that the present population will be able to afford the new housing or shopping opportunities. Relocation to other parts of the city is viewed with great disfavor, but is the most evident future for many long-time neighborhood residents, and most certainly for many of the families of the children attending the school.

Description of the School Setting

The school presently contains ten early childhood classes (PK - to Grade 2), eight classes grades three to six (including two mixed-grade classes), and eight special education classes for learning disabled and emotionally handicapped students, including one bilingual class.

In addition, a SIE-V unit with approximately 70 retarded young adults ages 14 to 21 is housed in a relatively new wing of the building. This three-story, thirty-room addition was attached to the older part of the school in the early 1970's when the school population soared to over 1300 students. Before the wing was built, quonset huts in the school yard were used for classroom space. Within ten years, however, the registration has been halved; less than 500 children were enrolled during the 1987-1988 school year.

This necessitated the release to the SIE-V program of the very desirable space in the new wing with its own lunch and gym facilities, and an elevator for wheelchairs. The SIE-V unit is autonomous in its administration and staffing, although there is considerable communication and cooperation at the faculty level with the host school.

There are a number of other units in the school, related to guidance services, lunch services, and to security and maintenance.

Although some grouping is evident in classroom instructional activities, both new and experienced teachers express most confidence in traditional, whole-class teaching methodologies, with extensive use of publisher-developed textbooks, teaching materials, and manuals.

With the district's support and assistance, the school has instituted a secondary-school type of departmentalization for homogeneously-grouped reading instruction classes for one 45-minute period daily. It had been anticipated that this type of scheduling would enhance the instructional program, particularly in reading. This was a needed innovation because of the school's decline in rank-order reading scores standing in recent years. As a result of this decline, the school has been under the scrutiny of the central city-wide Board of Education offices.

Because of these reading problems, the school has had many visiting teacher-trainers especially during the past year. Some of these staff developers work with teachers during the school day; some meet teachers after school, and visit the classrooms on a weekly or twice-weekly basis. There has been staff development not only in

reading, but also in math, in health and nutrition, in science, in creative writing, and in social studies. The supervisors of the school, while eager to have the staff development program available for the teachers, were nevertheless concerned for the many days when competent teachers were away from their classrooms for the purpose of training. The school was then required to provide for coverage of these classes with substitute teachers of often quite limited ability. It should be noted that these concerns of the supervisors were apparently justified. Pupil scores on Spring 1988 reading and mathematics city and state-wide tests were disappointing.

Certain minor subject area classes (physical education, art, music, computers, and library) are taught by cluster teachers once or twice a week to all classes. The school's filmstrip and record album collection is housed in the library, which is run by the library cluster teacher in the traditional manner, not as a true media center. Similarly, the science room as maintained by the science cluster teacher is simply a classroom with various collections of rocks, living plants and small animals, as well as materials for the areas of elementary school science study. The room is not used nor equipped to be used as a science laboratory.

Ten years ago there were major changes in the teaching staff due to massive city-wide lay-offs. This school as well as many others lost young teachers who had been trained in the innovative, open-education techniques of the 1960's and '70's. Other teachers were transferred to the school according to their placement on seniority lists, or to comply with ethnic balance mandates. In recent years, however, the

faculty has stabilized; no more than one or two teachers per year join or leave the staff.

The faculty of the school includes six teachers with six or more years of experience, a larger number of new teachers, with five months to three years of service in the school, and a pool of seven paraprofessionals and school aides who each have ten to fifteen years of experience.

Both new and seasoned faculty and staff expressed the need and interest to learn to use technology, particularly computer and video-related materials for curriculum instruction, for enrichment of classroom activities, and for improvement of their abilities to support the instructional needs of the children.

The principal of the school is most supportive of technology in education, having been instrumental in establishing a twenty-four unit computer laboratory in the school, and having arranged for several professional and paraprofessional members of the faculty to attend computer training workshops offered through local and city-wide Board of Education or university facilities.

Writer's Background and Role

The writer is an experienced supervisor assigned to the school for over ten years. The writer is also an experienced computer instructor, having conducted six extensive workshop courses for elementary and junior high school teachers in LOGO programming. The writer has also taught LOGO in the Continuing Education Division of a local college for

the past four years. Additionally, the writer has conducted two computer workshop courses for parents and their children.

The writer has studied LOGO with Seymour Papert (the inventor of LOGO) at MIT and at the New York Academy of Sciences. Additionally, the writer has participated in analysis of computer-enhanced Landsat images at NASA/GISS in New York City, and has earned a professional certificate in Computers in Education from the Bank Street College of Education in New York City.

Professional responsibilities of the writer include supervision of the science, computer, social studies, and bilingual programs. All equipment and matters related to instructional technology are also the responsibility of the writer. Additionally, administration of the city and state-wide testing program, and maintenance of the school's equipment, supplies, and textbook inventories are included in the list of responsibilities. Also part of the daily routine are supervision of lunch and recess, administration of the attendance improvement program, and on-call attention to student, staff, and parent needs.

Finally, the writer is responsible for the organization and conduct of a number of traditional annual school-wide events including the Book Fair, the Science Fair, Black History Month, etc. An important part of this group of activities is the increasing involvement of the writer in the school's development of an instructional focus on a theme of government and law. This is based on the fact that the school was recently named for the late Ruth Whitehead Whaley, the first Black woman to be admitted to the state bar, and a highly-respected former member of city government.

CHAPTER II

STUDY OF THE PROBLEM

Description of the Problem

Staff development time in school was fragmented among a number of programs that competed for the instructional attention of the same teachers and classes. There were two programs, Project Child and the New York State Prekindergarten Program (Warger, 1988), specifically designed to assist teachers of early childhood classes from prekindergarten through grade two. Grade three teachers and pupils received materials and visiting demonstration teachers in the areas of social studies and mathematics. Teachers in grades three and four received special training in communication arts. Teachers in grades four and five, including special education, were trained in mathematics in a program different from that for grade three as noted above. Each teacher of a regular class in grades two through six was trained for three or four days in the area of health and nutrition. Every member of the faculty, including special education teachers and all paraprofessionals, attended at least three reading conferences, one of which was also attended by the entire faculty of a neighboring school. Additionally, the principal of the target school and selected teachers were given training in leadership and in family and sex education. These various training opportunities were conducted at a

corresponding variety of meeting times and sites. These included monthly general all-faculty conferences, monthly grade conferences, pull-out workshops at outside sites on school time, stipend-paid after-school sessions, and voluntary lunch-hour meetings. Almost without exception this year, all teacher training has been conducted by consultants outside of the local school personnel training staff. These instructors, trainers, or developers were members of the local community school district staff, publisher's representatives, or curriculum specialists on the city-wide or state level. There was no discernible communication between the instructors of these different programs. There were days when two or more staff developers from several programs were in the building on the same day trying to find time and space to meet with the same teachers and with the principal, and to do observations or demonstration lessons in the same classrooms.

Notwithstanding the aforementioned extensive staff development over a wide range of curriculum areas, the school priorities nevertheless remained centered on improvement of reading and math scores, rather than on social studies or health or any other area noted above, or on educational technology. The attention given to the school in the form of monthly audits and monitorings by the central Board of Education and the local district strongly and adversely affected staff morale. The pressure thus exerted on the teachers to improve the standings of the school in the annual city-wide ranking of schools according to reading scores resulted in some conflicts regarding availability of materials and equipment. Conflict also arose when new registrants with a past record of low scores on standardized tests were

assigned to classes with other low-scoring students but with a superior teacher with a history of success in teaching low-scoring students to do well in reading and in test-taking.

There was a deplorable lack of knowledge on the part of the staff as to the best and safest use of technology in school. Carelessness in the use of equipment (frayed wires, multiple appliances on single outlets, damages to software and hardware) was frequent. Pupils were often called upon to handle even the most rudimentary equipment such as record players or audio cassette tape recorders, with little regard to safety or to appropriateness. Teachers did this regardless of their own sophistication in the use of their own home stereos, their expensive cars, and household appliances. For some years the writer attempted without success to instruct the teacher/director of the weekly school-wide assembly program in the four-step procedure for connecting the auditorium microphone. Of major importance was the matter of turning off the system to prevent burnout. This simple matter of turning off the equipment, which extended to the overhead stage lights (the 'gels' and spotlights), was so consistently neglected, however, that the school needed to requisition for repairs as often as four or five times a year. Ordinarily, equipment such as this did not need to be serviced more than once in three to five years. Without question, no member of the staff would have countenanced such neglect with their own personal equipment in their own homes.

There was the question of teacher attitudes related to being considered 'mechanically inclined' or 'robot-minded', and curiously, being thought of as both a 'super-brain' and conversely, as an

unintelligent, mindless 'machine' if one was knowledgeable about technology and comfortable around machines. The writer frequently noted the phenomenon of intelligent, educated teachers acting in a confused, reluctant, inept manner when requested to operate ordinary equipment, such as a radio or television by themselves, instead of calling on a student or a supervisor. This type of action was not limited to the female teachers, as one might expect, but could be seen with all members of the faculty. Of course, there were always one or two teachers and a handful of students who were happy to be called upon at any time to assist with the setting up and use of the equipment, and indeed many of the other teachers were pleased to permit them to do so. However, it was one of the functions of the writer as a supervisor in the school to assist these teachers, and all others to appreciate the need for all members of the staff to become reasonably knowledgeable and skillful in the appropriate use of the equipment for the instruction of the pupils. Using pupil monitors or requiring assistance from colleagues for these simple tasks, deprived the pupils of needed classroom instructional time, and diverted their colleagues from the professional attention they needed to offer to their own classes.

In regard to curriculum implementation, there was a dependence on textbooks and other publisher-created materials, on traditional, teacher-made materials such as flash-cards and charts, and on the use of traditional classroom materials such as chalkboard, wallmaps, and Cuisenaire-type counting materials. The use of publishers' teacher manuals led to at least one incident observed by the writer, in which a

teacher was so intent on the use of the manual for questions to be used during a particular lesson, that the teacher did not notice that the students were fully cognizant of the material, and that it would have been far more appropriate to proceed directly to more advanced material. Later, it was pointed out to the teacher that the topic of the lesson could have been updated for appropriate immediacy by using the school photocopier to reproduce in enlarged form a copy of a map displayed in that day's issue of a local newspaper. The teacher declined the ability to do this because the school aide was absent, and thus was not available to prepare such materials for the class. In the matter of the photocopier alone, teachers have for some time preferred to rely on their basic, everyday, generalized texts and workbooks, and to leave their more timely materials for as long as three days to a week to be duplicated by a school aide, rather than to operate the machine themselves, even when it meant that their classes would have had up-to-the-minute materials.

There was the observation that the use of technology was not a necessary attribute of the successful or highly regarded teachers in the school. To the contrary, the teachers with the most outstanding reputations as successful practitioners rarely used technology. On the other hand, new teachers liked to use filmstrips and records. But these teachers were prone to be careless or to use the equipment to excess. This may have been because the seasoned teachers were familiar with the records and filmstrip collections in the school and therefore were more inclined to seek more up-to-date materials to challenge their students. The new teacher was more likely to want to go through these

collections item by item regardless of the fact that the materials were already familiar to most of the children, who had been exposed to them in past years by other teachers. There was also the fact that the children enjoyed these types of audio-visual activities, even with overly-familiar materials, frequently regarding them as 'treats'. Therefore, these activities provided the new and insecure teacher with an illusion, for the moment, of a successful lesson.

The need for review of software was most important and was frequently overlooked because of time required to perform this task adequately. There was the tendency unless checked, for teachers, to use inappropriate software, such as 'pirated' videotapes made from home television, rented cartoon or Hollywood features such as the WIZARD OF OZ which, although enjoyable for home or recreational use, were totally inappropriate for school or instructional use. In point of fact, staff developers had used the videotape equipment often, for filmed classroom demonstration lessons usually with excessive background noise, or for rather mundane, 'talking heads' types of teacher-training films. As a result, teacher-trainees became noticeably bored, and exhibited some restlessness during recent showings.

There was also the documented belief on the part of many teachers in the school that the use of technology such as calculators and computers would cause pupils to miss learning the 'basics' of math or reading; there was the feeling that pupils needed to first 'understand' the processes intellectually, before they were permitted to implement these processes mechanically or electronically. There was a program for students held over in the fourth grade in operation in the school

for over five years. The curriculum for pupils retained in grade mandated instruction in the use of calculators. Funds were allocated to purchase fifteen calculators for exclusive use by pupils in the program. However, no teacher assigned to the program during the five-year period indicated any enthusiasm or interest in teaching the use of calculators. There was only continued reliance on pencil-and-paper arithmetic exercises.

The LOGO computer language was taught to each class once or twice weekly by the computer cluster teacher. Pupils learned to produce computer graphics and text programs with ease and skill well beyond their usual classroom performance. However, classroom teachers indicated little interest in using the computers to view work pupils had accomplished in the computer lab. These teachers thus missed opportunities to gain insight into ways to incorporate these learnings into their regular classroom programs.

Briefly stated then, the problem was that most teachers at the writer's school failed to use appropriate technology in their methods of teaching.

Problem Documentation

A three-pronged needs-assessment was conducted to determine school priorities in terms of best match of faculty interest, equipment available, and most effective use of time and space.

First, faculty interests were determined by use of a two-part questionnaire. In the first part teachers were asked to rank their

preferences for topics to be treated on Staff Development Conference days (see Appendix A). Of the fourteen teachers responding, three selected technology as a first or second choice, ten chose reading or math as their first or second choice, and there were six instances in which teachers noted other curriculum areas or concerns, such as science, social studies, writing, parent involvement or conflict resolution as first or second choices (see Table 1).

Table 1

Conference Planning Survey Results

TO ALL STAFF

PLEASE NOTE BELOW YOUR PREFERENCES AND SUGGESTIONS FOR TOPICS TO BE TREATED ON STAFF DEVELOPMENT DAYS. PLEASE NOTE YOUR 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th AND/OR OTHER CHOICES. THANK YOU.

ASSISTANT PRINCIPAL

PRE-PLANNING FOR STAFF DEVELOPMENT DAYS

Teachers' Names	Reading	Math	Writing	Class Mgt.	Social Studies	Science	Technology	Other
1.	4	7	3	-	6	5	1	(Parent Involvement)
2.	1	2	5	3	4	-	-	-
3.	1	2	6	3	4	-	5	-
4.	1	2	4	3	5	6	-	-
5.	-	1	4	5	-	2	3	-
6.	3	5	-	-	4	2	1	-
7.	1	2	5	3	4	6	-	-
8.	1	2	5	3	4	7	6	-
9.	1	2	5	3	4	7	6	-
10.	1	2	5	3	4	7	6	-
11.	1	2	4	3	6	7	5	-
12.	8	7	6	5	4	1	2	3 (Conflict Resolution)
13.	4	3	2	5	1	-	6	-
14.	1	3	2	-	-	5	4	-
TOTALS:	28	42	56	39	50	55	45	(5)

NUMBER OF

RESPONSES: 13/14 14/14 13/14 11/14 12/14 11/14 11/14 (2/14)

In the second part, all faculty and staff, including teachers, school aides and paraprofessionals were asked to note their willingness to attend a workshop on the use of the VCR for instructional purposes (see Appendix B). Results showed that 26 out of 27 staff members responded positively, including two itinerant teacher-trainers who had been omitted from the original list, but voluntarily added their names (see Table 2).

Table 2

Faculty Interest in VCR Training Survey Results

<u>TOTAL</u>	<u>Y</u>	<u>N</u>	<u>TEACHERS</u>	<u>PARAS</u>	<u>OTHERS</u>
27	26	1	20	3	4

These findings indicated that although the majority of teachers requested staff development in the teaching of reading and math, there was an important percentage that preferred training in technology given their first or second choice. Furthermore, a very large majority of both the teaching and non-teaching staff requested training in the use of the VCR, the most recent addition to the technological equipment in the school. Thus, these findings, in preliminary form, suggested support for timely implementation of a staff development program which capitalized on teacher interest in being trained to use video-related and other technology to improve the instructional program in their classrooms.

Second, the current inventory of video, computer, hand calculator, and standard audio-visual (filmstrip projectors, tape recorders, etc.)

equipment on hand was consulted (see Table 3).

Table 3

Equipment Inventory Summary of Items Available

<u>Equipment Item</u>	<u>Number Available</u>
Videocassette Player/Recorder	2
Color Television	2
Video Projection Monitor	1
Hand and Desk Calculators	8
Audiotape Cassette Player/Recorders	4
Record Players	6
Filmstrip Projectors	6
Overhead Projectors	3
Public Address System	1
16mm Sound Motion Picture Projector	1
Computers (withmonitors, disk drives, printers)	24

It was noted that two VCRs were available (one for the main school, and one for the SIE-V unit). Both were used with 26-inch color television receiver/monitors, although large-screen projection equipment was on hand. Given the school's videotape collection of five films related to an interactive classroom science multi-media program, two early childhood teacher-training films, and two Black History film documentaries (as well as many other instructional videotapes available from the local school district office), it seemed clear that it would be possible to prepare and present a workshop in a timely manner on the use of the VCR for classroom instruction with a minimum of difficulty and with a maximum of faculty support and interest.

It should also be noted that there was an extensive collection of other kinds of equipment in the school. Although most of the items in this group were still in working condition, they had been relegated to disuse because of difficulties in handling the equipment, or because of the preference of the staff for the more recent models.

A partial list of these items included:

Black-and-white television

Opaque projector

Simultaneous filmstrip projector/tape cassette player

Heat transfer copier

The above noted items had the greatest potential for reactivation into general usefulness in the school. However, other than for the opaque projector, teachers expressed no interest for the use of these items in their technological methodology.

The writer omitted inclusion of the opaque projector in the practicum activities because of the necessity for near-total darkness in the classroom, because the projector bulb was incapable of providing maximum visibility of the projected materials to the class, and because the clumsiness of transporting and setting up the equipment necessitated special handling by persons other than the classroom teacher.

The writer was aware that the heat transfer copier could be used to prepare transparencies from text or other printed materials for use in classroom instruction with the overhead projector. However, the ready availability to teachers of the materials for this process and easy access to the equipment was problematic.

Thirdly, a preliminary survey was conducted to determine the extent and/or frequency of teacher use of technology (see Table 4). This survey was accomplished through examination of selected teachers' planbooks, for the four-month period from the beginning of the present term.

Table 4

Equipment Utilization Summary

(Number of times equipment was used in three months)

	Filmstrip Projector	Record Player	Tape Recorder	TV/VCR	Other	Total
1st Month						
Gr. K - 2	1	4	-	-	-	5
Gr. 3	1	-	-	-	-	1
Gr. 4, 5, 6	-	-	-	-	-	-
Spec. Educ.	1	-	1	-	-	2
Clusters	-	-	-	1	-	1
2nd Month						
Gr. K - 2	-	5	-	-	-	5
Gr. 3	1	-	-	-	-	1
Gr. 4, 5, 6	-	-	1	-	-	1
Spec. Educ.	-	-	-	1	-	1
Clusters	-	-	-	2	-	2
3rd Month						
Gr. K - 2	-	4	-	1	-	5
Gr. 3	1	-	-	-	-	1
Gr. 4, 5, 6	-	-	1	-	-	1
Spec. Educ.	-	-	1	1	-	2
Clusters	-	-	-	1	-	1

Total number of times equipment was used

Gr. K - 2.....15

Spec. Educ. and Clusters.....9

Gr. 3 - 6 (target grades).....5

Of the teachers who submitted planbooks, four were experienced and highly regarded in terms of the quality of their on-going classroom program, five others each had less than four years experience but were also well regarded, and two were experienced, satisfactory teachers who were not as well regarded as their colleagues, principally because of their unimpressive attendance and punctuality records. These planbooks were collected from teachers on each grade K-6, and from the science cluster and resource room teachers as well. In all, 13 out of 26 planbooks were selected for examination.

Only four books contained any planning on the part of the teacher for use of technology or school equipment. In the first, the science teacher planned to teach parallel and serial electrical circuitry to several classes over a two-week period (see Appendix C). In the second, a Grade 2 teacher planned to photograph a classroom planting project (see Appendix D). One third grade teacher planned to have the computer teacher show the class a videotape on Dr. Martin Luther King, Jr. Lastly, a first grade teacher planned to have the school dental hygienist show the class a filmstrip on dental care. In the last two instances, the writer was present in the roles of observer and facilitator as well as supervisor/administrator, when these plans were implemented.

The use of the VCR by the computer teacher and the instructional value of the content of the videotape on Dr. King was compromised by the fact that more than half the class changed position several times during the 20-minute film in order to obtain a more advantageous viewing position, and by the fact that the classroom teacher not only

failed to attend the presentation and participate in the viewing, but also failed to follow-up on the content learnings when the pupils returned to their own room.

In the second instance, having prepared the class by properly re-arranging their seating for optimum viewing, and having prepared the room by drawing the shades and setting up the screen, the teacher of the first grade class and the dental hygienist both neglected to check that they had obtained the correct filmstrip for the lesson, and then neglected to re-set the accompanying audiotape at the correct cue. These omissions, easily corrected and easily prevented, delayed the start of the lesson by over 15 minutes, thus permitting an inadequate amount of time at the end of the lesson for fixing of the learnings and for follow-up discussion by the class.

The examination of all the planbooks, revealed many instances in which technology could have been easily incorporated into the content and/or methodology for the teaching of social studies (particularly current events) and math, especially multi-step word problems (see Appendix E), spatial relationships, and consumer education. Only one teacher planned for metrics (see Appendix F), and one for interpretation of a table or chart (see Appendix G). Even more evident was the failure on the part of teachers to recognize the possibilities for using technology to teach communication skills in speaking (using the telephone for example), writing (several manual regular and primary typewriters were available), and listening (there was a choice selection of book/tape titles in the library, and plenty of headphone sets and multi-jack devices on hand).

In summary then, the information as obtained from the review of the planbooks and inventories, the informal classroom observations, and the survey/questionnaires was evidence of the existence of the problem.

Causative Analysis of the Problem

Faculty attitudes toward technology discouraged acceptance of computers and calculators in classrooms as instructional tools or aids for pupil learning. Teachers tended to regard as superior those pupils who demonstrated instant recall of basic facts in math, social studies, science, etc. These were the students whom teachers viewed as 'ready' for an introduction to the use of technological aids to learning. Teachers then tended to provide these children, not with more challenging, thought-provoking material, but rather with even more mechanical, electronic-workbook types of exercises. Conversely, students who had difficulty with automatic recall of facts, and who would most have gained benefit from using technological support for their learning, were not permitted to do so. Teachers viewed these students as being in need of committing the material to memory before they were given the means to support or assist the memorization process.

Access for teachers to training programs was limited to curriculum areas and materials outside the scope of educational technology, and to time and sites inappropriate to the development of a level of skill and confidence which would have encouraged staff to use technology in classrooms. Those training programs which did utilize technology in

the attempt to train the teachers, often presented unimaginative or technologically inferior material such as the teacher-training videocassette tapes noted above.

Use of appropriate technology for vitalization of curriculum and teaching in the school by either new or seasoned teachers was largely unrecognized and unrewarded as exemplary teaching practice, whereas more traditional forms of classroom teaching were regularly commended. Financial assistance for various programs in the school was offered almost exclusively to provide support for the more talented teachers in the form of supplementary supplies of texts, workbooks, maps, picture collections, and trade books. All of these were greatly appreciated by the teachers and pupils, but they clearly directed the course of the more creative teacher's instructional pattern toward a print-dominated environment, rather than toward a more technologically oriented one.

Relationship of the Problem to the Literature

In reviewing the literature in search of a solution to the problem, it became evident that three elements in the solution needed to be considered. These three elements were: the need to effect a change in teacher attitudes toward technology, the need to understand the special requirements of staff development in technology, and the need to be alert to evidence of institutional change as the use of educational technology is increased.

Teacher Attitudes Toward Technology

Cross (1980) and Howell and Cox (1986) presented the general point of view that the technological uneasiness prevalent among educators needed to be addressed by designing faculty training programs with a philosophy based on adult learning, and by conducting them with a high degree of instructor enthusiasm. Fahy (1985) discussed several overall factors in staff development favoring positive staff attitudes toward technological advances. These factors included attention to individualized learning, on-site consultation opportunities, a clearly-stated policy as to the expected long-range effect of the new methodology, and follow-up to sustain the positive attitudes thus gained. Day and Scholl (1987) added that there was a need for a media specialist in the school to encourage improvement in teacher attitudes toward technology. The specialist would not only introduce innovations, but would also use them in actual classroom situations.

Professional research related to positive teacher attitudes toward technology, particularly teachers' perception and acceptance of the need for in-service training in computers was found in Woodrow (1987). Meister (1984) noted that acceptance was better when teachers perceived that money for technology was not being diverted from 'basics' or essentials.

Marshall and Bannon (1986) had at least three interesting findings. First, older educators (teachers and administrators) held positive cognitive and affective opinions concerning computers. They believed that computers could help to improve education, health, etc.

Second, female administrators with computer knowledge were the most positive group of all. Third, educators as a group had more positive attitudes toward computers than students (of college age) with whom this study was conducted. This in spite of the fact that students had greater access to computers than teachers, both at home and in the institutional setting. This study confounded at least two other myths. The first myth was that males were pro-computer whereas females were anti-computer; this study showed the opposite. The second was that males knew more about computers, females less. This study agreed, but indicated that male/female achievement in computer work overlapped.

On the other hand, these same researchers (Marshall and Bannon (1986)) expressed pessimism on the probability of educators complying with copyright laws through self-regulation. These researchers believed that this method would be as unsuccessful as it was with the photocopying of books and other publications for classroom use.

Sparks (1986) described the use of Stallings' Secondary Observation Instrument to determine changes in teaching behavior and the factors which had the most impact on promoting such change. Gressard and Loyd (1986) (and follow-up studies by Loyd and Gressard (1986) on perceptions of computer usefulness) offered a discussion of another instrument, the Computer Attitude Scale, for the measurement of computer anxiety and technological confidence in elementary, intermediate, and secondary school teachers. Their findings indicated in part that male teachers, more than female teachers, were more confident, and had a better image of themselves as computer conversant and computer competent.

Staff Development in Technology

For the purpose of this practicum, staff development included teacher workshops, in-service education, conferences, and mini-courses.

A definition of staff development was offered by Fenstermacher and Berliner (1983): "the provision of activities designed to advance the knowledge, skills and understandings of teachers in ways that lead to changes in their thinking and classroom behavior" (p. 4).

Showers, Joyce, and Bennett (1987) provided information on most effective designs for teacher training workshops and for follow-up mentoring. Peter and Smith (1984) suggested a checklist that might be used as a guide for a teacher-training course in computer competency. Of interest here was the inclusion of a component for special attention to minority and female participants. These researchers also suggested that a powerful incentive for some teachers would be the realization that their own ability to teach technology would open advanced career paths for their own pupils, e.g., in computer fields, etc.

Conti (1985) used the concept of facilitation in a discussion of the instructor's role in adult-learning situation, noting the need to take advantage of adult learners' experience, and their tendency to be self-activating. Lotan (1985) and Spitzer (1987) advised trainers to know the current knowledge base, the motivations and goals of the participants, and the depth of their investment in the training. Spitzer also stressed the need to emphasize implementation, to encourage pilot projects, and to insist on evaluation. Streit and

Stern (1986) also urged recognition of participants' positive vested interests, and immediate promotion of a sense of community in the class.

Davenport and Davenport (1985) and Prather and Strum (1987) invited consideration of andragogy. Yonge (1985) defined this term as:

That subset of situations where an adult is guiding and assisting another adult to achieve a more refined aspect of adulthood, and where the first adult exercises authority over the other by virtue of his greater knowledge, expertise, etc. This is clearly an extension of the...term "adult education", and is clearly distinguishable from pedagogy--the training of a child by an adult. (p. 160)

Understanding and applying principles of andragogy would benefit teacher trainers and trainees. There are implications also for teachers to prepare children for the experience of education as adults under the instruction of other adults as the knowledges and skills learned in their childhood schoolrooms become inadequate and out-of-date.

Brandes and Padia (1984) reported on difficulties of staff development in math and science at teacher centers. Padia and Brandes (1986) offered suggestions for selection of trainers, for refresher sessions in basic math and science for teachers, and other improvements that might be included in similar teacher center programs. McCarty (1979) encouraged teachers to use calculators for instruction by emphasizing teachers and students did not need to learn a programming language before using calculators to solve problems. However,

Robinson, Feldman and Uhlis (1987) noted the need to address teachers' perceptions of pupils' gains. A student with good math skill in a computer (or calculator) exercises might still be faulted by the teacher for lack of skill on pencil and paper tests. Teachers would also note with interest the findings of Hembree (1986) who reported that the use of calculators neither impeded or advanced (except in Grade 4) math skills or math enjoyment. However, use of calculators resulted in better test scores and in better self-esteem among students in regard to math competence.

In the area of teaching computer-based writing Zacchei and Loucke (1983) discussed the success of their teacher-training program based on the use of QUILL. Auten (1986) suggested that youngsters could combine the writing of short vignettes or mood-setting paragraphs with work on word processors. In earlier findings, Oxford and Moore (1979) described a program in which teachers were trained to understand, appreciate, and utilize the art of visual communication. Spitulnik (1979) reported on the successful use of the overhead projector in training engineers, including techniques which could be applicable to teacher-training. Hativa (1986) offered suggestions for using the videotape for teacher-training, with the note that ineffective techniques and poor production values were magnified on videotape, and appeared far more negative than viewing the same scene in reality. Soulier (1979) and Barkholz (1979) offered suggestions for teacher-trainers to include instruction in the effective use of copier facilities, and in the pre-presentation preparation of scripts and story-boards for classroom slide shows.

Hull and De Sanctis (1979) and Stasz and Shavelson (1985) discussed the importance of recognizing the special needs of adult learners for hands-on practice of new skills and for feedback on progress. These are factors that should be especially considered by teacher-trainers of technology. Fullman (1985) commented on the need for using extremely good materials for practice in teacher-training sessions, as well as for feedback and for on-going support.

Institutional Change and Educational Technology

There were larger questions of the institutional change needed to permit more extensive use of technology in schools. Snider (1987) reported on the fact that the state in which the target school was located was one of only six in the nation which instituted a full six-point school technology support program in the use of computers including software distribution, electronic bulletin boards, long-distance learning, and software and video production. Papert (1985) discussed his vision of a world-wide change in the nature of schooling enabling youngsters to utilize computers to investigate problems and processes. Streibel (1986) cautioned on the use of computer assisted instruction (CAI) as an approach to learning which put the computer system's goals ahead of the learner's goals.

Earlier discussions with school principals as found in Schwartz and Zacharias (1977) indicated that supervisors were aware of, and generally were prepared to accept leadership roles in the needed administrative and organizational changes in primary and middle grade

instructional programs in order to permit better focus on science and math, and better appreciation of technological aids to learning. Evans (1977) reported on curriculum adaptations which permitted technology to be used by youngsters in early grades for creative inventions at a level usually reserved for middle and upper grades. An opposing view was written by Goodwin, Goodwin and Hein (1986). They reported that much of the software for very young children that they examined was slow even for 3-year-olds, and could have been improved by livelier presentation, better graphics, music and sound effects, and by better programming for feedback. These researchers found little evidence of valuable computerized learning experiences for pre-schoolers, whether or not they were assisted and supported by adults.

The Council for Educational Technology for the United Kingdom (1979) noted the need for educators to prepare for a technological society, in which they should be prepared for life-long schooling as new products became available as a result of technological advances. The Council urged educators to move "decisively and courageously" (p. 17) on needed instructional changes. The point is echoed in Bybee (1987) in an argument for critical examination of the "Science-Technology-Society" (p. 274) linkages, and for the impact that technology has had and can have on ecology, world hunger and disease, and other sociological matters of global significance.

Meister (1984) proposed that any long-range program for integrating the use of video and/or computers into the schools depended on obtaining the commitment of visibly successful teachers to their own on-going training. Moursand (1983) suggested that teachers be

encouraged to use applications software for word processing and for information retrieval from databases as a regular pattern for instruction at the elementary and intermediate school levels.

Institutional change was the concern also of researchers in other parts of the world. As a result of work in Kenya, Mutiso (1982) reported that videotapes, if very carefully prepared for specific teacher audiences, can be successfully substituted for lectures, especially when a particular philosophy or methodology is to be disseminated to a widely separated constituency.

Harlen (1984) supported the development of workshop techniques in teacher training in science around the world. There was more active mental and physical participation in the training activities, and there was more thoughtful reflection by teachers on their progress and their attitudes toward the material. Cohen and Miyake (1986) explored the advantages of the establishment of international networks at secondary and college levels. (Known to the writer was at least one international computer network at the elementary and junior-high level established by a teacher group at a local college in this city.)

International communications networking was supported by Willis (1987) regarding the work of the British Technology Centers in creating and keeping technological experts for support of both teachers and administrators. In contrast, Bien (1986) reported the Israeli experience of unsuccessful attempts to innovate change due to conflicts over domains of authority as perceived by teachers, school and district administrators, and even by parents and outside agencies.

Jenkins (1979) suggested the need to examine and modify classroom

furniture arrangements, lighting, and floor plans to maximize effective use of television, videotapes, and computers. Grobman (1987) made several of the same points including implications special to the school library and computer laboratory. In a discussion of related matters, Wyman (1979) stressed the importance of attention to safety in the use of technology, particularly the need to check lamps, fuses, cables, toxic materials, etc.

A more recent report by Lotan (1985) suggested the need to focus on the depth of teacher understanding of the technology as key to effective use of technology in teacher-based curriculum design and implementation. Seaman and Steck (1985) proposed that schools build on teachers' knowledge and acceptance of developments in robotics for home and industrial use as a basis for technological advances in the educational setting.

There was a report on the historical influence of "teacher-proof technology" (de Castell and Luke, 1987 p. 422) in which a distinction was made between technology and technique. This report decried the over-use of technology to mass-produce or duplicate print materials thus influencing teachers and pupils to accept uniformity in teaching techniques and materials, rather than seeking creativity. Also related to a historical school management viewpoint, Diaute (1985) urged a change toward teaching students the value of collaboration, rather than competition, particularly in working with computers. Johnson, Johnson and Stanne (1986) also found in their study of secondary school students that the computer work group organized for cooperation achieved more, solved problems better, and stayed more on task. In

these collaborative groups the recognition of females as achievers was increased as was the enhancement of their participation in the group, and of their own individual self-esteem.

Of particular interest to the writer were the discussions of Spady (1985) and Greenfield (1985) on the key position of the vice-principal of a school in providing enlightened leadership in order to effect teacher acceptance for change. Spady (1985) noted that "the almost legendary stereotype of the vice-principal as keeper of the social and moral order of the school" (p. 108) would itself undergo change away from the merely administrative handling of pupils and plant, toward one with major responsibility for the instruction of teachers in on-going, in-house staff development programs. Greenfield (1985) reported that teachers tended to respond positively toward an assistant principal who made the effort to become thoroughly familiar with their classroom situations through informal visits and observations and supportive feedback during periods of experimentation or change. Spady (1995) added that the success of such change would depend on exploitation of a personality characteristic common to those in the vice-principal position. This particular group of educators were noted for being highly energetic, goal-oriented overachievers.

Summary

Guskey (1986) offered a useful model for a pattern of the processes discussed in the previous three sections. Given the inclusion of support, feedback, and follow-up in a staff development

program, the suggestion was made that teacher-trainers could expect improvement from the usual pattern of changes in practice leading to changes in attitude, then leading to changes in instructional results. Guskey (1986) expected that the improved pattern would be changes in practice leading to changes in results, then leading to and promoting changes in attitudes.

As Cleveland (1985) advised, "the 'information society' does not replace, it overlaps..." (p. 15). As this school community prepared continued the process of preparing itself and its students to control the future direction of the world, it was important to understand that human involvement in this process would require the ability to extract and synthesize large amounts of information. Nurturing and sustaining not only the ability to think, but the will to do so, is the first obligation of the educational technologist.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

It was projected that this practicum would focus on two areas, which when fully addressed, would assist in the solution of the problem. Firstly, faculty and staff would gain skills needed to utilize technological equipment and materials in classrooms before the end of the school term. Secondly, access to school-based technological assistance in the review, adaptation, and creation of appropriate curriculum materials would be made available to all staff including teachers, supervisors, school aides, and paraprofessionals.

General Goals

The first general goal projected for this practicum was that teachers in the target school would use appropriate technology in their teaching methodology. Major technology would include the use of computers for simulations, word processing, spread sheets and/or data bases, and telecommunications. Secondary technology would include the use of calculators, public address system, audio and video tape players, record players, projectors for filmstrips, slides and 16mm film, and overhead projectors.

The second general goal projected for this practicum was that technology would be used to vitalize the learnings in the major subject areas in the middle grades curriculum at the target school. Major

curriculum areas were designated as mathematics, creative writing, and reading. Secondary curriculum areas (for the purposes of this practicum) were designated as social studies, science, and music.

Specific Objectives

This practicum was designed to fulfill the following behavioral expectations:

1. Faculty would become proficient in the use of technological methodology.
2. Teachers in grades third through fifth would use technology in the subject areas of math, social studies, communication arts, and science.
3. Teachers would use a variety of the technological equipment available in the target school, specifically including the VCR, the hand calculators, and the computers.

Standards of Achievement

The accomplishment of the behavioral objectives was to be measured as follows:

1. A rating of 'Satisfactory' for formal and informal observations of teachers' use of technology in at least 16 out of 30 of the classrooms in the target school would be acceptable as evidence of success.

Note: a rating of 'Satisfactory' was generally given to a lesson presented according to a standard lesson plan format with a appropriate, realized aim, motivation, pupil participation, good questioning, skillful use of materials (including technological equipment), summary, evaluation, assignment, and plans for followup (see Appendix H).

2. Planning and scheduling for use of technological equipment by 7 out of 10 teachers of the middle grades across four areas of the curriculum was to be accepted as a standard of success in vitalizing instruction.
3. Planning and scheduling for use of three or more different kinds of technological equipment by 7 out of 10 of the middle grade teachers was to constitute successful achievement of the objective.

Evaluation Tools

The following materials and activities were to be used as instruments of assessment:

1. Teachers were to be observed before and after implementation to compare numbers of teachers using technology for classroom instruction with skill and confidence (see Appendix I).
2. Lesson planbooks were to be compared before and

after implementation to document teachers' use of technology in four designated subject areas (see Appendix J).

3. The schedule of equipment on reserve was to be reviewed before and after implementation for evidence that teachers were using a variety of technological equipment in their instructional programs (see Appendix K).

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Solutions

Ideas for technological innovations in the target school came from at least three sources--from the teachers themselves, from the visiting staff developers, and from the writer. A review of the literature, however, documented the serious shortcomings of each of these suggestions.

In the first instance, it was clear from preliminary discussions with teachers at the target school that there was a great deal of interest in the use of the television equipment. The possible use of videotaped materials for both classroom and conference had great attraction for teachers and visiting staff developers. However, the promise for maximizing television usage in schools for instructional purposes as discussed in Pike (1977) had given way to at least two rather unfortunate occurrences. There was firstly, the demand for hand-held cam-corder videotaping of made-in-school 'home movies', characterized by poor visual, sound, and content production values. And secondly, there was the increasingly questionable practice of the rental and large-audience in-school viewing of popular 'Hollywood' productions for assemblies, for rainy-day activities, and for so-called 'treats'.

In the second example, regarding the use of computers, it must

be noted that there had been strong encouragement on the part of the local school district's staff developers to use widely advertized word processing and data base software for both the teaching and the documentation of progress in reading and in writing. However, as described in Schaeffer (1980), in many ways these program materials were too elaborate and perhaps too rigid for the needs and the philosophy of the target school. Likewise, the direct, formal teaching of keyboarding skills, particularly in early childhood classes as noted in Hoot (1986), were considered inappropriate by the staff and supervisors of the school.

In the third instance the writer had been involved with a group of educators who are using the facilities of a local college to establish an international computer network. This effort included an electronic 'bulletin board' for classes and for individual pupils and teachers to exchange viewpoints on a variety of interests and concerns. The writer was interested in introducing the target school to this community of world-wide computer enthusiasts and to the other possibilities of satellite telecommunication as discussed in Kaplan (1984). However, the immediate questions of costs, of pertinence to the school program other than as a manifestation of a deep personal interest as any other hobby, and the extensive amounts of time that would have been needed by pupils, teachers, and the writer to thoroughly exploit the many possibilities of this opportunity, mitigated against involvement of the target school before late winter of the next school year. This would have been well past the time for implementation of this practicum.

Description of Selected Solution

The suggestions offered in the following writings were expected to be successful in the target school because teachers informally most frequently expressed interest in learning to use the computers, the videotape recorder, and the hand or desk calculators for improvement of instruction in their classrooms. In the work of Meister (1984) and of Moursand (1983) there were thorough discussions of the role of the supervisor in effectively providing the school atmosphere most conducive to teacher training and acceptance of the use of computers in the classroom. And as suggested by Hunnicutt (1987), the special attention given by the writer to the acknowledged leaders of the teacher group, whether formally, informally, or tacitly chosen, was expected to be well-rewarded when their enthusiasm was shared with their other colleagues. Busch (1985) also reported on the effectiveness of this. The atmosphere that the writer was expected to help establish in the role of on-site supervisor was one of active support, or direct one-to-one teacher training wherever possible. Recognition of effort in documented encouragement was to be sent to those teachers who extended the effort to learn to use the computer equipment and materials with their classes, and who supported and encouraged the efforts of their colleagues to do the same (Appendix L).

As noted before, Moursand (1983) and Morris (1981) offered suggestions for encouraging the use of hand calculators for math instruction in the elementary school. This material, as well as that of McCarty (1979), was to be introduced to teachers on the basis of

benefit to their classes; the teaching of calculator skills had not yet been included in the standard curriculum except the special program for pupils in fourth grade who were repeating the grade. However, the need to improve thinking and problem solving skills was a very important part of both the mathematics and the general curriculum. The use of the calculator to test a variety of mathematical solution theories quickly was most attractive to youngsters (Fielker, 1987). Therefore, in terms of pupil interest and eagerness, and in terms of ease for teachers to learn also, the use of the calculator was expected to be one of the key factors in encouraging teachers to use technology to improve the instructional program for their classes.

The next suggestion included in the practicum received the most positive response from the faculty. There was documented indications that most teachers in the target school indeed wanted to learn how to use the VCR equipment and materials (Table 2). Reider (1985) and Howe (1984) offered useful suggestions for integrating videotape materials into the classroom. Jenkins (1979) suggested the need to examine and modify existing classroom floorplans, furniture and lighting arrangements for most effective use of instructional equipment such as the videotape recorder/player and computers. In addition, Shannon and Fernia (1985) included important factors to enhance listening and viewing which teachers were helped to recognize as contributing to good use of technology in a lesson in terms of critical selection and presentation of appropriate materials. Levine (1986) discussed professional techniques in the set-up of video equipment which were applicable also to the use of other machines in the classroom. Wyman

(1979) presented helpful suggestions for appropriate and accident-free operation of different audio-visual machines for optimum benefit of the projectionist and the audience. Cook and Curtin (1985) offered an evaluation of the Childrens' Television Workshop materials. This included a discussion of the unique qualities of these programs which have significance for teachers who planned to correlate CTW materials into the on-going non-technical aspects of the classroom program.

From the literature also came pertinent suggestions for the design of a successful teacher training workshop, with opportunities for hands-on experiences, and for follow-up mentoring. Firstly, the suggestion of Franse and Siegel (1986) to use released-time for staff training (time in which the teacher is released from the classroom for a day or more for training, while a substitute teacher assumes responsibility for teaching the class) was a procedure which could not be used in the target school. Instead, the teachers voluntarily attended the sessions which were scheduled for 40 minutes before the start of the regular school day, well before the arrival of the students. Padia and Brandes (1986) suggested the need to include short, non-threatening math and science review sessions for the teachers. Wilkening (1979) described the equipment and materials to be included in a workroom where teachers could prepare their own technologically oriented materials. Implied in this is the understanding that the teachers would accept training in how to use the editing equipment, and the electronic storage and retrieval resources that such a workroom or laboratory would hold. The opportunity for the teachers to have ready access to work space and materials for hands-on

practice and preparation made this a most valuable suggestion. Ross, McCormack, Krisak, and Anand (1985) urged the special inclusion of material related to the personal interests of the teacher-trainees to spark interest in lesson development and problem solving. Wagschal (1986) urged at least a full year of the teachers' own experimentation with applications software for data and word processing before starting on the task of teaching computer skills to pupils. Corbett, Firestone, and Rossman (1987) proposed that change in teachers would be related to their perception of the school's on-going mission to prepare pupils for the world of work in the near as well as the more distant future, and to their acceptance of their own responsibilities to contribute to the success of that mission.

The importance of hands-on involvement, of preparation and use of meaningful software, and of maintenance of a high level of enthusiasm and support for the teachers' efforts throughout the training process were also noted in Bingham (1986) and in Seidman (1986). It was important also to follow the advice of Troost (1985) to include a discussion of any information (such as the Kastanmeier Congressional Committee Guidelines (1979)) regarding the legalities in the use, reproduction, and replay of electronic software. And, as noted previously, Greenfield (1985) noted the importance of regular observation of teachers' performance in terms of the teachers' perception that such observations and follow-up consultations were indications of the supervisor's support of their efforts to improve, and interest in their success.

Report of Action Taken

General Overview of Action Taken

A preliminary needs-assessment was conducted to identify the teachers who were to be included in the implementation phase of the project (see Table 5). This group included teachers of grades 3, 4, and 5, of both regular and special education classes. Additionally, the preliminary survey (summarized in Table 4) was conducted to determine the extent to which teachers had used the technological instructional equipment in the school before the workshops.

Table 5

Expected Faculty Workshop Participation

Teachers	Number
Grade 3	2
Grade 4	2
Grade 5	2
Science Cluster	1
Computer Cluster	1
Library Cluster	1
Special Education	3

Total Number of Teachers Expected to Attend Workshops.....12

Consultations were planned and conducted with the school principal and other itinerant staff developers to determine optimum dates for scheduling the implementation phase of the practicum. There had been heavy emphasis on staff development in the teaching of reading during all conferences during the past term because of the school's disappointing scores on the Spring 1988 city-wide and state-wide standardized tests. However, it was expected that the four all-day faculty conferences which had been scheduled in the fall just before the opening of the school term for the children, plus the on-school-time monthly grade conferences, and the monthly after-school all-staff faculty conferences would permit ample time (at least six to eight hours was estimated as the minimum time needed) for the inclusion of several sessions devoted to the implementation of this project. It was expected that these would be primarily the instructional part of the implementation; the follow-up and observational activities were to be scheduled afterward.

Implementation of the project was to take place through a series of two or more (up to a possible total of five) workshops designed to introduce teachers to the use of the selected technological equipment on hand in the school (VCR, hand calculators, and computers). Teachers were to participate in the evaluation of these workshops and the responses were to be documented (see Appendix M). Follow-up mentoring was to be scheduled to assist teachers in planning for the use of technology to vitalize instruction in the curriculum areas of reading, math, science, and creative writing.

Consultation with the school principal and with representative

teachers was to be held to determine the optimum design for the workshops (see Appendix N). The possible inclusion of demonstrations, review of available software, adaptations of software for individual teacher and student use, hands-on practice, provision for follow-up mentoring, and establishment of a practical system for distribution and care of hardware and software were all to be considered as appropriate materials to be covered in the workshops.

Formal and informal observations of selected teachers were to be scheduled. A checklist specifically to assess the use of technology during instruction was designed to be used as part of the observation process (see Appendix I). Teachers were to be encouraged to evaluate the software resources of the school, and to suggest replacements and additions (see Appendix O). These observations were to be followed by conferences with the teachers to reach points of agreement on successful integrations of technology into their instructional programs and on areas for improvement (see Appendix P).

Finally, a summary was to be prepared indicating the extent of teachers' use of technological equipment dating for one month from the completion of the workshop phase of the project. The range of curriculum areas and lesson topics for which technology was used for vitalization was also to be included in this summary (see Appendix Q).

Detailed Description of Action Taken

Workshops

Five workshops were conducted by the writer in October and November of the present school year (Appendix R). The topics of the five workshops were as follows:

1. Using the videocassette recorder
2. Using the photocopier
3. Using hand calculators
4. Using multimedia (tape recorder, overhead projector, etc.)
5. Using computers and computer materials

Notes were prepared by the writer and distributed to attending workshop participants (see Appendix S). Participants were also asked to complete evaluations of each workshop (see Appendix T).

The teachers attending the workshops ranged in assignment from early childhood through grade six, with several cluster teachers (science, library, art, computers, and physical education), the school principal, and other district office personnel also appearing (see Table 6). Of these, twelve teachers were assigned to the middle grades and were either classroom or cluster teachers under the direct supervision of the writer (see Table 7).

Introduction and basic instruction were followed by discussion during which teachers were encouraged to utilize two types of technological instructional methodology. The first involved using equipment such as the computer, copier, overhead projector, and tape

Table 6

49

Numbers of Teachers in Each Grade/Cluster (Gr/Cl) Attending Workshops

- - - A T T E N D A N C E - - -						
Gr/Cl	Staff Totals	Copier	VCR	Calculators	Multimedia	Computer
6	2	1	2	1	1	1
5	2	2	2	2	1	2
4	3	3	3	3	3	3
3	2	2	2	2	2	2
2	2	2	1	1	-	1
1	2	1	-	-	-	1
K	2	1	-	-	-	1
Science	1	1	1	1	1	1
Library	1	1	1	-	1	1
Art	1	1	1	-	1	1
Computers	1	1	1	1	1	1
Gym	1	-	1	-	-	-
Totals	20	16	15	10	12	15

Table 7

Numbers of Teachers of Third Grade to Fifth Grade Attending workshops

- - - A T T E N D A N C E - - -						
Teachers	Staff Totals	Copier	VCR	Calculators	Multimedia	Computers
Gr. 3-5	7	7	7	7	5	7
Clusters	5	4	5	2	4	4
Totals	12	11	12	9	10	11

recorder, to prepare print, transparencies, and self-recorded materials for later classroom use. The second methodology involved using equipment such as the VCR, calculators, and filmstrip/slide projector during the lesson itself to enhance instruction.

First workshop: copier. Learning to use the photocopier for preparation of seatwork materials was the topic of greatest interest for teachers other than learning to use the VCR. This workshop also attracted the largest number of teachers and paraprofessionals, school aides, and other personnel such as the school family workers, special education faculty, guidance counselors, special reading teachers, other supervisors, and visiting district teacher trainers. In their evaluations several participants noted that the group was too large for the instruction to be fully appreciated, and that relatively few were able to participate in hands-on practice during the workshop time.

Nevertheless, in the weeks and months since the completion of the workshop, the skills have been well-used for enrichment of classroom instruction. As suggested by Christiansen (1988), samples of work done on the copier by teachers for use in their classrooms were collected and matched to lesson aims, pupils' learning ability levels, and attention to copyright requirements. For the most part, this inspection revealed that teachers were using the copier to advantage in a most professional and appropriate manner. Useful black-line masters accompanying the texts used in the school were being utilized and prepared in class or small-group sets. Early childhood teachers regularly enlarged interesting materials for better display and viewing

by their young students. Also teachers displayed versatility in combining materials from various sources into short, interesting reading and study materials for the special individualized needs of particular students.

The writer has noted, however, that deep concerns regarding the annual standardized achievement tests in reading, mathematics, social studies, science, and expository writing, have caused almost all teachers, particularly those who teach the middle grades, to feel the need to prepare a great many test-taking skills worksheets in each of these subject areas. Until the practice was discouraged, many teachers shared their worksheets with colleagues in special education, or on upper or lower grade levels, thus circulating materials which were frequently inappropriate for these other students.

Second workshop: videocassette recorder/player. This workshop was very well attended by classroom and cluster teachers, including those teachers in the target group, although there were few personnel other than regular faculty. In their evaluations of the workshop, teachers were disappointed to learn that they would be unable to use the VCR in their own classrooms because of the difficulties and dangers of transporting the equipment on the staircases of the building. Also the lack of suitable software was noted; at least one teacher remarked that the warnings against school use of videos made or rented for home use only was overdone. However, the announcement that one room in the school has been permanently designated for use of this equipment and that suitable furniture for optimum viewing has been provided and

arranged there for use by all classes and groups, was welcomed by the teachers. School orders for appropriate materials were placed, and there is now a small, but well-received and growing collection of educational videotapes on Black history and culture, school safety, arts and crafts, folk tales and other stories, and guidance.

The discussion of technological methodology during the workshop was based in part on the remarks of Marshall (1988) who proposed the use of the classroom, not just as a "workplace" (p. 9), but as a room where aspects of human relations (pupil to pupil, teacher to pupil) were enhanced in spite of the use of technology. Also, the use of certain technology, such as video, can lead to a perception of the classroom as a "recreational setting" (p. 14), one in which a more relaxed atmosphere is expected and permitted. The implications for classroom management, for lesson organization, and for revisions in the concepts of student and group self discipline, were discussed in the workshop to assist teachers in maintaining a learning environment in their classroom during use of the VCR.

Visiting staff developers were interested in the use of the VCR for viewing videotapes of classroom demonstration lessons. The comments of Acheson and Gall (1980) were relevant to this discussion. These authors offered the reminder that the use of audiotape alone would also be of value, particularly to focus attention on the quality of a teacher's questioning technique or of pupils' responses.

Third Workshop: calculators. This workshop was well attended by classroom teachers in the target grades, although the overall

attendance was the least of any of the workshops. In their evaluations, teachers noted the need for additional time to practice with the calculators on their own. Subsequently, a few larger calculators were purchased by the school, and made available for use by selected teachers both for their own practice and for demonstration purposes during classroom lessons.

The discussion of methodology included the comments of the National Science Board (1983) that students from kindergarten through grade six needed to acquire proficiency in the use of the calculator. Good, Mason, and Grouws (1988) found that educational supervisors needed to perceive the value of technology (including calculators) in a school's mathematical instructional program.

The intense preparation for the standardized tests prompted the teachers in the middle grades to have serious reservations about using the calculators without pencil and paper work. Therefore, while the calculators have been used weekly in the middle grade classes, the teachers' lesson plans reveal that pencil and paper work is still required of students either before going to the calculators, or afterward as a check on the accuracy of their data input. On this point the findings of Hativa (1988) and of Dalton and Hannafin (1988) in their work with computer assisted instruction (CAI) have implications for assessments of student abilities and progress in that teachers need to perceive the difficulties that both low and high achieving pupils face not only in determining solution strategies to mathematical problems, but also in correct handling of the calculator hardware.

Fourth workshop: multi-media. With this workshop the numbers of participants increased somewhat both in the target group and in overall attendance. Since teachers were already familiar with the handling of most of the equipment presented in this workshop (overhead projector, audiotape cassette recorder/player, etc.), their evaluations of the workshop centered on the need for improvement of the school's library of software. Many teachers also remarked on the need to have their own equipment in their own classrooms on a permanent basis. In fact, when each teacher was given an allocation for classroom materials, many teachers purchased record players, tape recorders, microscopes, and cameras for their own classroom use.

The discussion of technological methodology again included the need to preserve the academic structure of lessons involving the use of technology, rather than to use films, records, and other such materials as rewards for achievement in classwork or behavior. As is their custom with certain mathematical manipulatives, teachers were encouraged to consider the term "semi-concrete" (Ediger, 1986), p. 4) to describe these software materials also. This helped teachers to improve their perceptions in regard to the use of technology in their primary teaching functions as well as in review, follow-up, and extension work.

Inspection of planbooks and formal and informal lesson observations showed that the middle grade teachers, both in classroom and cluster assignments, have used multimedia technology more than any other type. This may be due to their familiarity with the equipment.

to their increased confidence in the handling of mechanical problems that might arise during a class lesson, and to the improved selection of software, such as filmstrips, audiotape cassettes, and LP records, now on hand in the school. Of greater significance is the increased awareness, gained as a result of the workshop, of the need to maintain high instructional standards during lessons involving the use of technology.

Fifth workshop: computers. With the fifth and final workshop, attendance returned to the larger numbers with which the series had begun. Since this was their introduction to the use of a computer for several of the participants, the discussion of methodology was based on how technology could help to support their on-going instructional program. This was a reflection of the observation in Troyer (1988) on the trend in teacher training toward the utilitarian viewpoint in regard to computers.

Teachers in the middle grades were interested in using the spreadsheet software to assist them in the analysis of data from the basal reader unit test program as supplied by the publisher and used in the school. In their evaluation, one or two of these teachers pointed out, however, that the basal reader unit tests were mainly of a word analysis, vocabulary, and standard comprehension type (main idea, details, inference, fact/opinion). Computer analysis of the basal reader unit tests, therefore, although meaningful and interesting, did not necessarily yield information useful to these teachers who were preparing their students for a cloze-type of standardized reading test.

A few teachers, therefore, were sufficiently motivated as to attempt to work with one feature of the basal reading program which permitted teachers to prepare their own tests, based not on the reading series, but on their own teaching objectives. This work has gone forward since the completion of the workshop, but the process requires a discouraging amount of the teachers' time away from the students, and is daunting in the difficulty of matching student responses to objectives and aims as designed and written by the teachers. However, this project is of sufficient interest to the middle grades faculty that the writer does not doubt that it will be completed, although perhaps, not in time for significant use by the teachers during this school term.

These efforts by teachers to process data in a form which yields information to be used for appropriate grouping and individualized instruction is supported by Adams (1989). This author also recommends that teachers be encouraged to borrow the school computers for practice and exploration in their own homes. The school has had the benefit of a grant for this purpose, and two middle grade teachers have had school computers in their homes for more than six months.

During the workshop itself, the discussion of technological methodology included the important topic of student collaboration during the instructional process. The participating teachers, who worked together during the workshop and later in the test-making project, have gained understanding of the value of collaboration as an instructional technique. Smith (1989) and Ediger (1988) noted that the team approach allowed differing skills to be brought to a cooperative

task and to a joint product. MacGregor (1988), although dealing with secondary school students, supported the methodology of having pupils work together in small teams. This practice is preferred by the school computer cluster teacher in working with middle grade pupils, even when class registers are low enough to permit some pupils to work alone at a computer station. Group work is also encouraged by Bork (1988) both with and away from computers in that it allows opportunities for positive person-to-person relationships.

The workshop also included a brief exploration of the word processing capabilities of the computer and appropriate software. Teachers were quick to appreciate the advantages of using word processing to improve skills in creative writing, such as writing style and composition development (Loheyde, 1984). The teachers were also more appreciative of children's difficulties when they had to deal with their own typing and syntax errors, and with their own misinterpretations of instructions generated by the software (White, Collins, & Gremillion, 1988).

Finally, the teachers of the targeted middle grades agreed that the computer cluster teacher's use of Logcwriter, Bankstreet Writer and other software for pupils' writing assignments was successful. As described in Barrett and Paradis (1988), however, they were also able to understand that the set-up of the computer room itself, with furniture immobilized for security, and with a clumsy projection system, placed limits on optimum use of the software for instruction in proof-reading and editing.

Formal Observations and Evaluatory Conferences

Formal observations of twelve teachers under the writer's direct supervision were held during a two-week period following the workshops. Eight of the teachers were assigned to a class in grades three through six; four were cluster teachers of computers, science, library, or art, who presented their lesson for formal observation to a class in one of the middle grades. Prior to the lesson observation, each teacher was required to prepare a lesson plan outline (see Appendix U).

Following each observation, a brief evaluatory meeting was held with each teacher. A letter was then prepared by the writer for placement in each teacher's permanent professional file (Appendix V).

The writer of this practicum in the capacity of permanently assigned supervisor of middle and upper grades at the target school was careful to conduct a program of formal and brief informal observations followed by an individual conference with each teacher, and by prompt written communications to teachers as described in Glatthorn (1984). McGreal (1988) urged selectivity in choosing areas for observation and evaluation, pointing out that "the narrower the focus" (p. 21), the better a school supervisor can use the lesson observation method to determine the extent of a teacher's use of a particular technique, in this case, instructional technology.

In several instances, notably one in which a fourth grade teacher used the overhead projector for teaching map skills, and another in which a sixth grade teacher used the VCR to develop understandings of certain events in black history, the writer was able to exercise the

suggestions of Mohr (1987), and join the teachers (on their invitation) in the presentation of their lessons. By this action the teachers were encouraged to understand, as noted by Mohr (1987), that even during a formal observation, the supervisor may be regarded not as a competitor, but as a colleague in partnership with the teacher.

Short Range Plans

Teachers' planbooks were surveyed for notations of use of technology for vitalizing instruction for a period of one month following the completion of the observations (see Appendix W).

The survey of teachers' planbooks revealed that all twelve teachers of middle grade classes planned at least one use of technology for vitalization of instruction during the month after their formal observation (see Table 8). The seven classroom teachers planned for use of technology in each of the four selected subject areas of language arts, mathematics, social studies, and science. The five cluster teachers planned to use technology in their own or a related area of expertise (see Table 9).

Eight of these planned lessons were in the area of use of the computer to analyze unit reading test results for remediation and mastery of reading skills. Four were in other aspects of the language arts and social studies, including the use of the tape recorder to rehearse and prepare for an assembly presentation, and the use of the overhead projector to demonstrate cursive handwriting technique. Other lesson plans included the use of the slide projector to show teacher-

Table 8

Summary: Teachers' Short Range (Four Weeks) Plans for Using Technology

EQUIPMENT	- - - T E A C H E R A S S I G N M E N T S - - -											TOTAL	
	3A	3B	4A	4B	4C	5A	5B	Sci.	Art	Libr.	Gym		Computer
Record Player	4	1	1	-	-	-	-	-	-	-	-	-	6
Tape Recorder	-	-	2	-	-	2	1	-	1	-	-	-	5
Overhead													
Projector	2	-	2	-	-	2	-	-	-	-	-	1	7
Slide/Filmstrip													
Projector	1	-	1	1	-	1	-	4	-	1	-	-	9
VCR	-	-	-	-	-	1	-	-	-	-	1	4	6
Hand Calculators	1	-	-	4	4	4	-	-	-	-	-	4	17
Computer	2	-	3	-	-	2	-	-	-	1	-	4	12
TOTAL	10	1	9	5	4	12	1	4	1	2	1	13	63

Note. All teachers use the copier at least once weekly.

Sci. = Science Cluster Libr. = Library Cluster

Table 9

Summary: Teachers' Short Range Plans for Using Technology in Selected Subjects

SUBJECT AREAS	--- TEACHER ASSIGNMENTS ---								TOTAL
	Gr. 3	Gr. 4	Gr. 5	Sci.	Art	Libr.	Gym	Computer	
Creative Writing									
and Reading	4	5	4	-	-	2	-	1	16
Mathematics	3	11	6	-	-	-	-	9	28
Social Studies	2	1	2	-	-	-	-	-	5
Science	1	1	1	4	-	-	-	-	7
Others	1	-	-	-	1	-	1	4	7
TOTAL	11	18	13	4	1	2	1	15	65

Note. Gr. = Grade Sci. = Science Cluster Libr. = Library Cluster

made slides of cloud formations for science classes, and the use of the VCR with a fifth grade class to show a videotape on preparing for careers. Three teachers in the fourth and fifth grades planned for weekly use of the hand calculators.

All teachers have become sufficiently proficient in the use of the copier, so that it is used now with a familiarity approaching that with which the teachers use chalk. Teachers' use of the copier is monitored by supervisors on a spot check basis to insure that teachers continue to select appropriate materials to be copied for classroom use.

Long Range Planning

Finally, a general conference was held with all of the teachers involved in the workshops and/or in the observations in order to plan for on-going use of technology in vitalizing their classroom instructional programs for the balance of the school year (see Appendix X).

Plans prepared by teachers of middle grade classes for use of technology for the second half of the school year are summarized according to projected equipment utilization in Table 10, and according to subject area in Table 11. The encouraging totals of planned use of technology is due to at least three factors. First, the teachers have gained confidence in the use of these materials in their own classrooms as a result of their participation in the workshop experience. Second, the teachers are assured of the writer's on-site support for their continuing efforts to improve their skills in the use and understanding

Table 10

Summary: Teachers' Long Range (Four Months) Plans for Use of Technology

EQUIPMENT	T E A C H E R A S S I G N M E N T S				TOTAL
	Grade 3	Grade 4	Grade 5	All Clusters	
Record Player	18	15	7	-	38
Tape Recorder	7	10	11	-	28
Overhead					
Projector	18	10	6	8	42
Slide/Filmstrip					
Projector	19	8	7	2	36
VCR	10	8	7	13	38
Calculators	9	22	19	4	54
Computers	6	14	17	11	48
TOTAL	87	87	74	38	284

Table 11

Summary: Teachers' Long Range Plans for Use of Technology in Selected Subjects

SUBJECTS AREAS	T E A C H E R A S S I G N M E N T S				TOTAL
	Grade 3	Grade 4	Grade 5	All Clusters	
Creative Writing					
and Reading	30	25	15	9	79
Mathematics	15	20	20	8	63
Social Studies	12	12	15	-	39
Science	5	15	12	10	42
Others	25	15	12	10	62
TOTAL	87	87	74	36	284

of educational technology. The findings of Aquila and Parish (1989) on the value of mentoring were especially influential here. Third, the improvement in the school's inventories of new and appropriate software for the collections of records, filmstrips, audio cassettes, and videotapes has encouraged teachers to plan to use these materials in their classroom instructional programs on a long range basis.

CHAPTER V

RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Results

The general goal for this practicum was two-fold. First, teachers in the target school were to use appropriate technology in their teaching methodology. Second, technology was to be used to vitalize major subject area learnings in the middle grades. The goal was met.

Specific objectives and standards were as follows:

1. Teachers were to become proficient in the use of appropriate technology in their teaching methodology. A rating of 'Satisfactory' for formal and informal observations of teachers' use of technology in 16 out of 30 classes was to be acceptable as the standard of successful accomplishment of this objective. In actuality, 20 out of 30 teachers were rated 'Satisfactory', indicating successful accomplishment of this objective. Explanation for this result, which surpassed expectation, could be that teachers increased their interest, attitude, and confidence in using technology through participation in the "hands-on" workshop experience.

2. Teachers in grades third through fifth were to use technology in the subject areas of math, science, communication arts, and social studies. The standard for successful accomplishment of this objective was that 7 out of 10 teachers of the middle grades were to record plans for the use of technological equipment to vitalize instruction in the four curriculum areas. Inspection of planbooks

revealed that 12 out of 12 target teachers planned to use technology in teaching the four major subject areas, thus indicating that the standard for success had been achieved and surpassed. Explanation for this result could be that workshop discussions of the important implications of educational technology, and suggestions for its use in curriculum implementation offered by the writer during follow-up consultations, enabled more teachers to gain insight and conviction regarding the advantages of using technology to vitalize their lessons.

3. Teachers were to use a variety of technological equipment available in the target school. Planning and scheduling for use of three or more different kinds of technological equipment by 7 out of 10 target teachers was to constitute successful achievement of this objective. The result was that 12 out of 12 teachers of middle grade classes indicated their intention to use three kinds of technology in their short and long range plans. Explanation for this result, which again surpassed expectation, could be that their successful demonstration lessons, and assurance of continued support from the writer as on-site consultant, increased the determination of more teachers to plan for continued use of instructional technology.

The implementation of this practicum was entirely successful as shown in the comparison of projections and results in Table 12.

Table 12

Comparison of Projected Standards with Actual Results

Projected Standards	Actual Result	Standard Met
1. 'Satisfactory' demonstration: 16 out of 30	20 out of 30	Yes
2. Vitalization of 4 subjects: 7 out of 10	12 out of 12	Yes
3. Planning use of 3 machines: 7 out of 10	12 out of 12	Yes

Conclusions

Although results indicated that standards for using technology in instructional methodology were clearly achieved by the twelve target teachers supervised by the writer, the circumstances regarding the involvement of the eight special education teachers were less certain. Since they were under the direction of their own on-site supervisor, the special education teachers, all of whom had middle grade students in their classes, were informally, rather than formally, observed by the writer for their use of technological methodology. Although each teacher was rated 'Satisfactory', the following factors were noted:

1. Special education teachers could not attend the workshops because they were held when these teachers were with their classes. They requested and received the workshop notes, but missed the discussions on using technology as a regular part of instructional methodology. Therefore, while their use of technology was satisfactory, their point of view for using it mainly as a behavioral modification device or as a motivational 'treat' was debatable. Furthermore, continued use of technology as an external reward for classroom performance could be expected to decrease in effectiveness (Marshall, 1988).

2. Special education teachers were hesitant to use technology in their instructional methodology lest it interfere with the standard patterns of classroom management and discipline mandated for special education classes. Hativa (1989) recounts a representative example of restless and distractable behavior in low achievers resulting from extended exposure to CAI activities. Nevertheless, the

eight special education teachers were positive in their attitudes regarding the use of technology.

It had also been projected that technology would be used to vitalize instruction in the major subject areas (mathematics, creative writing, and reading) as well as selected secondary curriculum areas (social studies, science, and music). While each of the seven classroom teachers and three of the cluster teachers included technology in their instructional program for all of these subject areas, the cluster teachers of art and of physical education planned on a long term basis to provide only for music enrichment. Their reasons for this, as communicated informally to the writer, were that their classes involved physical movement and active, non-deskwork participation. They felt that use of technology was relatively inappropriate for the art room and gymnasium, other than for records or tapes to provide background mood music for painting and clay work, or melodies and rhythms for movement and dance instruction. They felt that lessons in their subject areas of a more academic nature (art appreciation slides or video presentation of rules and training tips for games) might better be presented in the regular classroom.

However, after their plans had been accepted as written, each of these teachers were helped, with the advice and support of the writer, to provide at least one other technological enhancement to the teaching of their special curriculum area, as well as to learnings in language arts and mathematics. The art teacher assisted a class group with drawing a series of pictures for a fairy tale directly onto a blank filmstrip, advising them on best use of color and perspective for

maximum effect when used with the filmstrip projector. The teacher of physical education was quick to appreciate the advantages of using and of instructing students in the use of electronic devices already available in the school to record speed, distance, scores, etc.

The writer's promising experience with these two teachers is reflected partially in the opinions of Aquila and Parrish (1989) in regard to:

...a clash in schools between the two cultural types, technology and craft, with each having a different view of the teaching role ...teachers are essentially members of a craft culture and will, therefore, resist technical cultural programs and ways of implementing change...Craft cultural change requires continually looking for ways to help school people make sense of new technology and discover ways to modify and adapt it...Coaching, teaming, demonstrating, trial and error, and adapting are all craft ways of learning new techniques. (p. 54, 55)

The positive results of this practicum have convinced the writer that the use of technological methodology in the overall instructional program in the target school will continue to improve.

Recommendations

Based on the workshop evaluations and on the projected plans submitted by the participant teachers, the following recommendations

are offered:

1. The workshop program should be expanded to permit sufficient practice for all participants.

2. Technology-oriented materials prepared by the teachers should be maintained in a central annotated file in the school in order to be available with appropriate revisions and adaptations for use by other teachers.

3. There is a need for updating the inventory of commercially and professionally prepared technological materials and equipment in the school. A committee of interested teachers, parents, and paraprofessionals is presently at work on preparing a list of videotapes, computer programs, and other software for priority purchase from school funds.

4. There is a need for a better method of bringing together the teacher and the classes with the equipment as available. A "Hi-Tech" club for interested youngsters has been organized under the direction of the writer, so that materials and equipment may be brought to teachers quickly and efficiently, and returned to storage without damage or loss.

5. Interested faculty, students, and parents should plan for a "high-tech" camping experience such as was suggested in Terrill, Stauber, and Cone (1986). This type of event would help to further improve attitudes toward the use of technology in an instructional setting, and would afford ample time to explore technological methodology.

6. There is the need for teachers to observe other teachers

appropriate materials. The writer has arranged for a group of interested teachers to visit at least one other public school and one private school in the area, where good programs in technological educational techniques can be observed. These experiences may be shared with other faculty at later conferences.

7. It might be of interest to teachers to have the opportunity to observe experts in the field of instructional technology, perhaps at the secondary school or college level. This recommendation is based in part on the suggestion of Pallrand (1989), who sees this as a means of helping teachers gain insight into the need to bridge the gap for children between the relatively simple and static science and technological experiences offered in elementary school, and the fast-moving developments and advances in technology that occur almost every day.

Dissemination

The notes distributed to the workshop participants were used several times in workshops with parents, and in the pupils' "Hi-Tech" club meetings, with appropriate revisions. Furthermore, new teachers assigned to the school after completion of the workshops, were successful in their request that the workshop experience be repeated for them, at least in part, and that the notes be made available to them. It was evident to the writer that the technology workshop experience was probably about to be institutionalized in the target school, with the expectation of several workshops or conferences on

educational technology offered each term.

Finally, a large grant for staff development in the area of science on all grade levels was awarded to the target school. The writer was asked to present one workshop on instructional technology for this project, and to develop a set of notes, stressing the methodology and philosophy of the use of technology in school. The development and presentation of this material was expected to be an important feature in the dissemination of the findings of this practicum.

Rapid changes in technology preclude the efforts of all but the most enthusiastic teacher to maintain an up-to-the-minute knowledge of the most recent advances. What is needed, therefore, besides interest and a working knowledge of easily accessible technology, is an attitude that regards technology as one, but only one, aspect of an enriched curriculum designed to address the needs and expectations of the next century. As Walker (1985) observed, educators, as well as all others, may well opt for one type of technology over another, but no one is free any longer to opt for no technology at all. There is the pressing and continuing need to get better at using technology not only with greater precision, but with greater wisdom.

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APPENDIX A
CONFERENCE PLANNING SURVEY FORM

TO ALL STAFF:

PLEASE NOTE BELOW YOUR PREFERENCES AND SUGGESTIONS FOR TOPICS TO BE
TREATED ON STAFF DEVELOPMENT DAYS. PLEASE NOTE YOUR 1st, 2nd, 3rd,
4th, 5th, 6th, 7th, 8th AND/OR OTHER CHOICES. THANK YOU.

ASSISTANT PRINCIPAL

PRE-PLANNING FOR STAFF DEVELOPMENT DAYS								
Teachers/ Names	Reading	Math	Writing	Class	Social	Science	Technology	Other
				Math	Studies			
1. _____								
2. _____								
3. _____								
4. _____								
5. _____								
6. _____								
7. _____								
8. _____								
9. _____								
10. _____								
11. _____								
12. _____								
13. _____								
14. _____								
15. _____								
16. _____								
17. _____								
18. _____								
19. _____								
20. _____								

APPENDIX B
SURVEY OF FACULTY INTEREST IN VCR TRAINING

TO ALL FACULTY AND STAFF:

87

PLEASE SIGN BELOW IF YOU WOULD BE INTERESTED IN ATTENDING A WORKSHOP
WITHIN THE NEXT TWO MONTHS ON THE TOPIC OF USING THE NEW VIDEOCASSETTE
RECORDER/PLAYER FOR INSTRUCTIONAL PURPOSES.

ASSISTANT PRINCIPAL

NAME	Y/N	TEACHER	PARA	OTHER	NAME	Y/N	TEACHER	PARA	OTHER
	✓		✓			✓	✓		
	✓		✓			✓	✓		
	✓		✓			✓	✓		
	✓			✓		✓	✓		
	✓	✓				✓	✓		
	✓	✓				✓	✓		
	✓	✓				✓	✓		
	✓	✓				✓			✓
	✓	✓				✓	✓		
	✓	✓				✓			✓
	✓	✓				✓			✓
	✓	✓				✓	✓		
	✓	✓							
	✓	✓							
	✓	✓							
	✓	✓							

APPENDIX C
SCIENCE CLUSTER SAMPLE PLAN

They will also observe the care of the
our terrarium, aquarium, & animal cages.

Class 3-1 - 4-1.

These classes now have electricity kits
in their own rooms.

Will do the lessons on light and construct
a periscope.

Go on to show how different substances
give off different colors - eg. sodium
gives off yellow light. yellow street
lights have sodium - mercury gives off
pale blue light.

We can tell the composition of stars by
examining the colors they give off to
powerful telescopes.

Class 2-1

Lesson on light - children will use mirrors
to reflect light from mirror to mirror and
play with periscopes.

Exercise Draw diagrams to illustrate
principles involved.

Class 1-1 - 1-2

These classes will use battery circuits and
mirror reflections also in classroom.

Will study winter trip and plant in
Central Park then we continue our
investigation of the flora of the Park.
This week - Explain exercise high
rises above 106th - 107th streets.

Conferences for Mrs. Mark 9th Meadow
Clay -
Mark 12.

Science Conference at U. University
in Brooklyn.

Mark 11 - Fort Belvedere - Thru
winter trees.

Other activities. Build telegraph buzzer into
Class 4-1 & a transmitter radio.

Respectfully submitted

Mark 5. 1988

3/7/88

APPENDIX D

GRADE 2: SAMPLE WEEKLY LESSON PLAN

APPENDIX E

GRADE 6: SAMPLE WEEKLY LESSON PLAN

APPENDIX F

GRADE 5: SAMPLE WEEKLY LESSON PLAN

Monday March 7

8:45-9:15 - "A Letter for Bobby" - reading a story
 Discuss - How friends help each other -
 Review what happened in "New Girl" - Review
 vocabulary - silent reading

9:30 - 10:15 - Reading - "Mansa Goes on a Hunt" -
 Africon Zulu tribe - Where's Africa? (SE) - Pronoun
 names - Vocab (TG 210) Set questions for silent
 reading - read - (TG 211) Picture clues/intro
 Re-read story - skim for characters feelings, lit
 + figurative meanings - Work on "paraphrase"

10:20 - 11 - Math - Dividing Decimals - introduce
 practice estimation - 330 - 331 - HW - 331 - #16

11 - 11:50 - Social Studies - Biographies of
 people of the American Revolution - kids
 choose books and partners for presentation
 Discuss format

12 - 12:50 - Lunch

12:55 - 1:10 - Copy spelling words - HW -
 Define 1-10 & use in sentences

1:10 - 1:50 - Library

1:55 - 2:45 - Science - Discuss what's been
 learned about electricity - Horner does a
 demonstration

Friday March 11

845-925 - CIMS - Discuss Part I - feelings involve how ideas are presented - Silent reading Part I (Also - talk about conflict) - Does Annie's conflict have a resolution? (Does she deal with the reality

930-1015 - Reading - "Goodbye to the Wild Horse" True story - Discuss opposing positions on issues - pick a current topic - silent reading - Discuss afterwards - Write your own point of view

1020-11 - Math - Metric Measurement - 188-189414 HW-191 - Units of measurements - length - meter use rulers to get an idea.

11-1150 - Present social studies projects - discuss what else could be added - Why are these books about these people?

12-1250 - Lunch

1250-1:15 - Study spelling
1:15 - 1:30 - Spelling test

130-155 - Review division of decimals

2-2:45 - Gym

APPENDIX G

GRADE 3: SAMPLE WEEKLY LESSON PLAN

SUBJECT	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	FOR WEEK
Reading	Ans: To identify a biographical fiction selection as a literary form, to develop an understanding of the meaning and history of a national historical and famous persons. Read "Coyote Cry"	Ans: To realize that an author's choice of words can determine the mood of a story, to understand that broadening our knowledge of a broadens our understanding and Read "Coyote Cry"	Ans: To increase understanding of the field of psychology, to recognize that individual differences exist among people. Read "Exploring the Mind"	Ans: To recognize the general biographical fiction, to understand that a selection often requires delicate handling and work. Read "On the Rise of the South"	Ans: To recognize elements of humor in a story and examples of irony, to gain insight into the human characteristics of a character, to understand the writer's use of language. Read "Prophet"	
Spelling	Group I 5 Carnival 6 position 15 valuation 10 measures 13 attention 18 relation 19 shoulder 9 huge 4 palace 14 ourselves 1 research 1 neither 11 union 7 keen 2 whether	Group II 13 pathic 20 suddenly 21 hammer 63 little 139 one 7 autumn 3 July 16 really 2 least 10 voice 11 cellar 8 theater 5 questions	olden 21 remembered 13 pathic 20 suddenly 21 hammer 63 little 139 one 7 autumn 3 July 16 really 2 least 10 voice 11 cellar 8 theater 5 questions	Ans: To teach the meaning and structure of this week's words. To continue reinforcing structure using spelling test each other in pairs. Ans: The students will be able to use the information from a given table through the open sentence that could be used to find the missing information. Ans: Use of Commutative of Multiplication, today and tomorrow. To name 3 possible reasons why communication began in particular places, to	Ans: To teach misspelled words and each put in alphabetical order. Use words in sentences; final test. Ans: The children and the associative property be able to do basic of multiplication. Multiplication facts: $(2 \times 3) \times 4 = 2 \times (3 \times 4)$ 6 $\times 3 = 2 \times 9$ 18 = 18	
Math	Ans: The students will be able to estimate sums by rounding addends to the largest place; to add two or more addends using format with or without regrouping. Ans: To have children learn about the many varieties of people in the Sun Day Low-Park. Closure pp 182-184 Ans: To learn about the 1955 School Fitness Survey and how 6-12 year olds are to participate in the survey. Ans: To identify the syllable with primary stress in 3-syllable words. eg equipment	Computer 2⁰⁵ - 2⁵⁰ Ans: To reinforce learned vocabulary in Chapter 7 and Unit 3. Have children make cards with meaning and draw a picture to show. Ans: To notice that the Sun rises in the east and sets in the west. The Sun moves from east to west as the day progresses from dawn to dusk. Ans: To locate information in a book by using the main topics and Subtopics in an index. eg Railroads (pp 182-184)	Ans: To learn about the controversy concerning the Alaska National Wildlife Refuge and Alaska's Wildlife and Out in W.R. article. Mrs. 11⁰⁵ - 11⁵⁵ Ans: To learn and recognize the phonemes. Group I: Correspondence of long vowels (y, i, e, o, u) as in four books. Case beautiful (pp 182-184)	Mrs. 11⁰⁵ - 11⁵⁵ Ans: To learn and identify the meanings of words with prefixes pre-, post-, and -ness. eg pre- -ness, -ish (pp 182-184)	Library 11⁰⁵ - 11⁵⁵	
Science						
Language Arts						

APPENDIX H
OBSERVATION LESSON PLAN OUTLINE FORM

OBSERVATION LESSON PLAN OUTLINE/FORM FOR CRITIQUE

100

Teacher: _____	Class _____	Room _____	
Date of Lesson: _____	Time _____		
Curriculum Area _____	Lesson Topic _____		
Aim: _____			RATING Sat/Unsat
Behavioral Objective (s) _____			_____
_____			_____
Materials: _____			_____
Equipment: _____			_____
Pivotal Questions: _____			_____

Motivation _____			_____
Pupil Participation _____			_____

Medial Summary _____			_____
Practice and Application of Learnings (Key Questions and Activities) _____			_____

<u>Differentiation</u> of Instruction, Grouping and Individualization _____			_____

Final Summary: _____			_____
Evaluation _____			_____
Assignment(s) _____			_____

Planned Follow-Up Lessons or Activities _____			_____

Other Comments _____			

Overall Rating: Satisfactory _____	Unsatisfactory _____		

APPENDIX I
OBSERVATION LESSON TECHNOLOGY CHECKLIST

OBSERVATION LESSON TECHNOLOGY CHECKLIST

Teacher _____ Class _____ Date _____

Yes / NoEvidence of Teacher Preparedness or Training in use of Hardware:
Comments: _____Evidence of Teacher's Review of Software:
Comments: _____Evidence of Teacher's Attention to Seating Arrangements and Sound/Light Levels?
Comments: _____Evidence of Cognitive Learnings, Skills or Concepts Gained Primarily Through
Use of Technology in this Lesson:
Comments: _____Evidence of Appropriate Use of Software:
_____Class Type Cognitive/Interest Level-Appropriate _____ Too
Difficult _____ Too
Easy _____
Comments: _____Evidence of Appropriate Teacher Intervention in Lesson Technology (Pause, Voice-Over)
Comments: _____

Evidence of Appropriate Pupil Involvement in Lesson Technology:

Handling of Equipment: _____

Handling Software: _____

Preparation of Data Base Material: _____

Use of Word Processing Capabilities: _____

Preparation/ Analysis/ Evaluation of Results: _____

Comments: _____

Evidence of Teacher's Attention to Safety and Emergencies (Bulb Burnout):
Comment: _____Evidence of Teacher's Intention to Use Technology for Follow-up Assignment:
Comment: _____

APPENDIX J
PLANBOOK TECHNOLOGY CHECKLIST

PLANBOOK TECHNOLOGY CHECKLIST

TEACHER _____ DATE(Week Beginning: _____

CLASS _____ TEACHER TRAINED? (Y/N) _____

Time/Period:	M-	T-	W-	T-	F-
Equipment:					
record Player					
Tape Recorder					
Overhead Projector					
Filmstrip Projector					
Slide Projector					
VCR					
Calculator(s)					
Computer(s)					
Copier					
P.A. System					
Microphone					
16mm Film Projector					
Lesson Focus:					
Reading					
Math					
Science					
Creative Writing					
Social Studies					
Music/Art/Other					

Appropriateness:

Grade Level

Class Type

APPENDIX K
REQUEST FOR EQUIPMENT FORM

Teacher's Name _____ Today's Date _____

Equipment Requested: _____

Date/Time/Location for use of equipment _____

Support equipment or materials needed (extension cord, screen, etc.)

Lesson Focus or Aim: _____

Curriculum Area _____ Lesson Topic _____

Will you operate this equipment yourself? (Yes/No) _____

When have you used this equipment previously? _____

Will you require supervisor's assistance with this equipment? (yes/no) _____

Do you need and/or request training or review in the use of this equipment?
(Yes/No) _____ If 'yes', please note convenient date and time _____Please note below the follow-up activity children will be instructed to
complete as part of this lesson.

(TEAR HERE. RETAIN LOWER PART UNTIL AFTER USING EQUIPMENT.

THEN COMPLETE AND RETURN LOWER PORTION TO SUPERVISOR.)

TEACHER _____ EQUIPMENT _____

Please note any matters which made it difficult for you to operate this
equipment.Please note your suggestion on ways to make it easier for the faculty to use
this equipment.

DATE _____

APPENDIX L

SAMPLE LETTER OF ACKNOWLEDGEMENT



W

W

ELEMENTARY SCHOOL

108

Scholarship • Initiative • Perseverance

A. A. V. , Assistant Principal

To: _____, Teacher of Class/Cluster _____

From: _____, Assistant Principal Date: _____

Re: Participation in Technology Workshops

Your active participation in the recent Educational Technology Workshops is hereby acknowledged, as is recognition of your commendatory efforts to upgrade your professional skills through learning to use our school's computers, calculators, VCR, etc.

There is ample evidence that you are using your new skills to vitalize your classroom program. You are encouraged to continue in this practice, and, through your example, to invite your colleagues to join you in using all the technological resources of our school to enhance the instructional program for our students.

APPENDIX M
TECHNOLOGY WORKSHOP EVALUATION FORM

TECHNOLOGY WORKSHOP EVALUATION FORM

Name (optional) _____ Date _____

1. Please note below your general opinion on the instructional technology workshops as presented to date?

2. In what ways was this workshop of benefit to you?

3. How might this workshop be improved in the future?

4. Other comments

APPENDIX N
TECHNOLOGY WORKSHOP PLANNING FORM

TECHNOLOGY TRAINING WORKSHOP PLANNING FORM

112

TO ALL FACULTY:

IT IS EXPECTED THAT A SHORT SERIES OF WORKSHOPS WILL BE SCHEDULED TO TRAIN TEACHERS IN THE USE OF THE TECHNOLOGICAL EQUIPMENT AVAILABLE TO YOU IN THIS SCHOOL FOR IMPROVEMENT AND ENRICHMENT OF INSTRUCTION.

THE CONTENT OF THESE WORKSHOPS WILL INCLUDE THE FOLLOWING:

1. Instruction in the use of:

-TV/VCR, calculators, computers, tape recorder, photocopier

-Filmstrip, 16mm motion picture, overhead projectors

-Record player, public address system, radio, auditorium

2. Demonstrations and hands-on, individualized practice

3. Safety Standards and Legal Considerations

4. Classroom Management and Educational Technology

5. Planning for Curriculum Enrichment through Use of Technology

6. Using Technology in Formal and Informal Observation Lessons

7. Costs and Catalogs

8. Criteria for Selection and Evaluation of Hardware and Software

PLEASE INDICATE BELOW ANY OTHER SUGGESTIONS YOU MAY HAVE FOR ADDITIONS TO THE CONTENT THAT WOULD MAKE THESE WORKSHOPS MORE INTERESTING AND VALUABLE TO YOU. THANK YOU.

ASSISTANT PRINCIPAL

Name _____ Class/Cluster/Para/Aide _____

APPENDIX D
SOFTWARE EVALUATION FORM

SOFTWARE EVALUATION FORM

Teacher's Name _____ Today's Date _____

Lesson Topic _____ Curriculum Area _____

Lesson Aim _____

Title of Materials Used: _____

Date/Time of the Lesson _____ Location _____ Class _____

1. How did these materials help you to accomplish the aim of your lesson?

2. In what ways did these materials specifically benefit individual pupils?

3. What did the children learn from these materials that was not readily available elsewhere?

4. In what ways was this material disappointing?

5. What are other materials you would recommend to replace or to supplement these? _____

6. Please attach or include children's reactions or responses or comments in regard to these materials. _____

APPENDIX F
POST-OBSERVATION CONFERENCE DISCUSSION OUTLINE

POST-OBSERVATION CONFERENCE
DISCUSSION OUTLINE

TEACHER _____ CLASS _____ DATE _____ TIME _____

What evidence is there that the aim of the lesson was realized? Suggestion for Improvement:

In what ways did use of regular school materials contribute to the success of the lesson? Suggestion for Improvement:

In what ways did use of technology (software and/or equipment) contribute to the success of the lesson? Suggestion for Improvement:

In what ways did teacher successfully adapt regular classroom methodology or management procedures to permit use of technology for enrichment of the lesson? Suggestion for Improvement:

What evidence is there of appropriate pupil participation in the lesson other than through responses to teacher's questions? Suggestion for Improvement:

How did teacher's use of pivotal questions successfully guide pupils through lesson so that all key concepts and skills in the aim were attained? Suggestion for Improvement:

What evidence is there of teacher's growth in appropriate selection and use of technology for enrichment of curriculum? Suggestion for Improvement:

What follow-up procedures are planned as a result of this conference?

Training:

Informal/Formal Observation:

Mentoring:

APPENDIX Q
UTILIZATION AND VITALIZATION SUMMARY FORM

SUMMARY

EQUIPMENT UTILIZATION AND CURRICULUM VITALIZATION

(Number of times technology was used to enrich curriculum during a one-month period)

	TV/VCR	Computer	Hand Calculator	16mm or Filmstrip	Record or Tape Player	Other
Grade 3						
Grade 4						
Grade 5						
Special Educ.						
Science Cluster						
Computer Cluster						
Library Cluster						
Paraprofessional						

	Reading	Math	Creative Writing	Social Studies	Science	Other
Grade 3						
Grade 4						
Grade 5						
Special Educ.						
Science Cluster						
Computer Cluster						
Library Cluster						
Paraprofessional						

Comments on School Aide Involvement: _____

Comments on Parent Involvement: _____

Comments on Pupil Involvement: _____

APPENDIX R
SCHEDULE OF TECHNOLOGY WORKSHOPS

SCHEDULE: TECHNOLOGY WORKSHOPS

DATE:

TO: ALL FACULTY (TEACHERS AND PARAPROFESSIONALS)
 FROM: A. A. V , ASSISTANT PRINCIPAL

A short series of five 40-minute workshops on the use of technology in our school will be held on Thursday mornings from 7:55 to 8:35 a.m. beginning this Thursdayth, 19 .
 Topics to be explored are:

Date:	Copier
Date:	Videocassette Recorder
Date:	Hand Calculators
Date:	Multi-media (overhead projector, tape recorder)
Date:	Computers

Please sign below if you expect to attend any or all of these workshops. Please indicate also if you wish to have any other form of instructional technology included in the workshops.

Teacher/Para Name	Copier	VCR	Calculators	Multimedia	Computers
Mrs. P	Yes			Yes	
Mrs. R	Yes	Yes	Yes	Yes	Yes
Mrs. J	Yes	Yes			Yes
Mrs. S	Yes	Yes		Yes	Yes
Mr. W	Yes	Yes			
Mrs. Po	Yes	Yes		Yes	Yes
Mrs. F	Yes	Yes		Yes	Yes
Mrs. Z	Yes	Yes		Yes	
Mrs. Pi					Yes
Mrs. Si	Yes	Yes	Yes	Yes	Yes
Mrs. E	Yes	Yes		Yes	Yes
Mrs. W	Yes	Yes		Yes	
Mrs. C					Yes
Mrs. We	Yes	Yes			
Mrs. K	Yes	Yes	Yes	Yes	Yes
Mrs. G	Yes			Yes	

APPENDIX S

NOTES DISTRIBUTED TO TECHNOLOGY WORKSHOP PARTICIPANTS

P. S.

E. D. J. , PRINCIPAL

A. A. V. , ASST. PRIN.

OCTOBER 6, 1988 - 8:00 AM

INSTRUCTIONAL TECHNOLOGY WORKSHOP SERIES

1. COPIER

PROCEDURES FOR USE OF THE COPIER:

1. CHECK: COPIER IS READY FOR USE - NOTE SETTINGS; LISTEN FOR 'READY' SIGNAL.
2. CHECK: PAPER TRAYS ARE FULL. FIND AND LOAD MORE PAPER INTO TRAY IF NEEDED.
3. OPEN LID; CHECK: GLASS SHOULD BE CLEANED WITH PAPER TOWEL IF NECESSARY.
4. PLACE ORIGINAL FACE DOWN ON GLASS. CENTER TOP EDGE OF PAPER AGAINST RULER.

REMINDER: IMAGE REVERSES LEFT TO RIGHT. CHECK MARGINS! CLOSE LID.

5. CHECK SETTINGS, INCLUDING SIZE AND INTENSITY.
6. PRINT ONE COPY. CHECK ACCEPTABILITY. ADJUST SETTING OR PLACEMENT IF NEEDED.
7. CHECK COUNTER. PRINT.

PROFESSIONAL STANDARDS:

1. EDUCATORS ARE NOT EXEMPT FROM COPYRIGHT LAWS.
2. MONITORING OF COPIER USE MAY EVENTUALLY BE REQUIRED BY OUR DISTRICT OFFICE.
3. COPYING SHOULD NOT BE AN AUTOMATIC REFLEX - CAREFUL SELECTION OF SUITABLE MATERIAL FOR OPTIMUM VALUE TO PUPIL LEARNING IS ALWAYS OUR RESPONSIBILITY.
4. ALL STUDENT SEATWORK PREPARED ON THE COPIER IS TO BE MARKED AND RECORDED.

OTHER CONSIDERATIONS:

1. UNTIL FURTHER NOTICE, MATERIALS TO BE REDUCED OR ENLARGED ARE TO BE PREPARED ONLY BY REQUEST TO MAIN OFFICE. HOWEVER, USE OF THESE OPTIONS, AS WELL AS USING BOTH SIDES OF THE PAPER, IS VERY MUCH ENCOURAGED.
2. ALL MATERIALS TO BE COPIED ARE TO BE SENT TO SUPERVISOR FOR APPROVAL AT LEAST ONE DAY IN ADVANCE OF NEED. BE SURE TO INDICATE YOUR NAME AND THE NUMBER OF COPIES REQUIRED ON A COVER SHEET.
3. READING MATERIALS TO BE COPIED WILL BE SENT TO MRS. CLARK. ALL OTHER CURRICULUM MATERIALS TO BE COPIED WILL BE SENT TO MRS. BROWN.

4. IF YOU PREFER TO DO YOUR OWN COPYING, INDICATE THIS ON YOUR COVER SHEET; MATERIALS WILL BE THEN BE RETURNED TO YOU AFTER APPROVAL.
5. PLEASE BE AWARE THAT OFFICE COPIER MUST BE USED BY OUR SCHOOL SECRETARY FOR OFFICIAL MATTERS. IT WILL NOT BE POSSIBLE TO PERMIT 'EMERGENCY' COPYING OF CLASSROOM MATERIALS IF IT INTERFERES WITH REGULAR OFFICE ROUTINE. IT IS TO STRONGLY URGED THAT MATERIALS TO BE COPIED BE SUBMITTED FOR APPROVAL AS FAR IN ADVANCE AS POSSIBLE.
6. PLEASE BE REMINDED THAT ONLY MATERIALS RELATED TO CLASSROOM CURRICULUM OR OFFICIAL BOARD OF EDUCATION BUSINESS MAY BE SUBMITTED FOR COPYING.
-

(TEAR OFF AND RETURN TO AAV LETTERBOX)

WORKSHOP EVALUATION - #1 - COPIER

NAME (OPTIONAL) _____

CHECK ALL APPROPRIATE: K-2____ 3-4____ 5-6____ CLUSTER____ PARA____

SPEC. ED.____ OTHER____

2. IN WHAT WAYS COULD THIS WORKSHOP HAVE BEEN IMPROVED?

3. THE NEXT WORKSHOP WILL BE ON THE USE OF VIDEOTAPE RECORDER. WHAT DO YOU WISH INCLUDED WHICH WILL BE OF PARTICULAR VALUE TO YOU?

USE OF THE COPIER TECHNOLOGY TO PREPARE CLASSROOM MATERIALSFor All Copies:

1. Be creative in preparing your own materials by cut-and-paste methods. Combine relevant pictures and text from different sources.
2. Material can be copied onto both sides of a sheet whenever needed.
3. Be sure your copy is clean--pencil marks, water or grease marks, etc. will all be copied as dark spots or blotches.
4. All colors (including yellow, pink and gray) will copy as black or as a grainy black-and-white. Please avoid half-tones or colors--results will be less than satisfactory.
5. Our copier is best used only for black-line masters, ink, type, or print. Any color or type of paper can be used.
6. USE COPIER ONLY FOR NON-COPYRIGHTED MATERIALS FOR IN-SCHOOL USE.

Reduction to Smaller Size:

Use this capability to reduce large charts, calendars, etc. to a more manageable size. Avoid reducing print or type wherever possible. (See sample attached of marginally acceptable materials which have been reduced to 85% of original size.)

Expansion to Larger Size:

Use this capability to enlarge newspaper articles, maps, and black-line pictures to a larger size for easier reading, for coloring, or to make bulletin-board sized posters. (See sample attached of map and text materials enlarged by 85% of original.

Note: An enlargement can be made of an enlargement--in order to obtain even larger sizes. Be sure that the original is very sharp black-and-white type, print, or line picture.

Summary:

1. Our copier is best used for black-line pictures or for type, or for black print. Colors or gray tones do not photocopy well.
2. Color copies can be made on other copiers available outside the school--they are more expensive and are seldom warranted for just a few copies.
3. Use of the copier is restricted to authorized individuals. See AAV if you wish to learn how to use the copier, or to receive more information on how to prepare other materials.

2. VIDEOTAPE RECORDER/PLAYER

PROFESSIONAL STANDARDS:

1. Use of almost all films available for rent, purchase, or off-air taping is not permitted in schools or other public settings. The FBI warning on use of these films for home use only is to be taken very seriously by educators.
2. The small library of tapes available for use in this school includes:
 - a. "Voyage of the IMI" interactive video-computer science/social studies series. It is available from Ms. P .
 - b. Staff development: early childhood, science, etc. - at district office
 - c. A few cam-corder tapes made here on site of school events (Fashion Show, Special Educ. Dept. corridor party, etc.)
3. Purchase of other video tape materials from Dept of Educ. and/or Bd. of Educ. as well as many other professional and commercial sources is an option to filmstrip materials. Indeed, many filmstrip collections are now available on videotape.

PROCEDURES FOR USE OF VCR: PLAYER MODE

1. Select appropriate tape. 20-30 minutes maximum. Professionally prepared materials are preferred as a rule. Plan to use only those parts of a longer tape that are of particular importance to your lesson. Avoid over-use of VCR by planning to view highly pertinent materials no more than once a week.
2. Adjust seating for optimal viewing by pupils. Be sure sunlight is neither on the screen, nor in viewers' eyes. Plan to use TV monitor for no more than 25 viewers. A larger group should use the VCR projector and large screen. Instead. Room need not be darkened for ordinary TV viewing. However, use of the projector for large audiences requires a well-darkened room or auditorium.
3. Check: VCR and TV must be connected in the PLAYBACK or TV OUTPUT jacks. Turn selector knob to CHANNEL 3.

BEST COPY AVAILABLE

4. Turn TV on; videotape settings should light up also. Keep volume low.
5. Ignore clock settings. Use switches on machine itself, or set remote control to PLAY.
6. FAST FORWARD (FF) to title frames. Turn up volume as needed only after required section of tape has been found. This will avoid disturbing the audience with the static noise usually heard before tape begins to play.
7. If you plan to repeat any section, make note of the number on the counter as the section is played. Later the tape can be rewound to that number and the section replayed.
8. Reduce volume as closing credits are displayed. STOP when tape ends. REWIND immediately. Use of remote control is recommended to maintain class attention, which might be disturbed if teacher is unsure of which switches on machines to use. Turn off TV.

PROCEDURES FOR USE OF VCR: RECORDER MODE

1. Check: Vcr and TV must be connected in the RECORD or TV INPUT jacks. Turn channel selector knob on both RV and VCR to channel of program to be recorded. Reset counter to zero.

- OR -

2. Read manufacturer's directions for pre-setting controls on VCR to record programs automatically. Clock and calendar must also be set correctly on VCR if pre-set feature is used.
3. Insert blank VHS tape. Activate controls to turn machines on for immediate recording. Or, follow manufacturer's directions to set machines for later automatic recording.
4. When recording is finished, note number on counter. Beginning and ending counter numbers should be noted on videotape label along with title and brief description of each program on the tape.
5. Most VHS tapes can record up to six hours if slow recording speed is selected; this mode can be used for almost all off-air tapings. However, a

tape mainly of music, where sound quality is particularly important, requires a high-quality blank tape as well as recording at regular speed. All videotapes may be re-used and taped-over again. The no-record tab at the back of some tapes might be removed to prevent re-use, but the space can be covered over and the tape re-used if necessary, although quality might be reduced.

PROCEDURES FOR MAKING A VIDEOTAPE.

1. Purchase, rent, or borrow a cam-corder system that is suitable for your needs. Sufficient blank tapes should also be available. Tapes may be reused.
2. Study special techniques for videotape production. These include preferred use of voice-over commentary rather than reliance on live sound recording which may be distracting or distorted. Also editing-in-camera is preferred to overuse of panning or zoom techniques.
3. An adapter will be needed to permit use of the smaller cam-corder tapes with the VCR.

(TEAR OFF AND RETURN TO AAV LETTERBOX)

WORKSHOP EVALUATION - #2 - VIDEOTAPE RECORDER/PLAYER

NAME (OPTIONAL) _____

CHECK ALL APPROPRIATE: K-2___ 3-4___ 5-6___ CLUSTER___ PARA___

SPEC. ED. ___ OTHER___

1. IN WHAT WAYS WILL THIS WORKSHOP BE OF ASSISTANCE TO YOUR CLASSROOM PROGRAM?

2. IN WHAT WAYS COULD THIS WORKSHOP HAVE BEEN IMPROVED?

3. THE NEXT WORKSHOP WILL BE ON THE USE OF HAND CALCULATORS. WHAT DO YOU WISH INCLUDED WHICH WILL BE OF PARTICULAR VALUE TO YOU?

P. S.

E. D. J , PRINCIPAL

OCTOBER 20, 1988

A. A. V , ASST. PRINCIPAL

INSTRUCTIONAL TECHNOLOGY WORKSHOP SERIES

3. HAND CALCULATORS

There are presently more than 25 calculators on hand in the school. These are of varying manufacture--including Casio, Texas Instrument, and Sharp. At least five require AA batteries, and should be switched off when not in use. The rest are solar powered; these require only exposure to a light source in order to work. Eventually, the small batteries in these will also deteriorate and the entire calculator may need to be replaced.

There is also a larger, solar powered model which may be used by the teacher for demonstration, although the read-out panel is not large enough for easy pupil viewing. Additionally, the model in the main office, which operates on AC current, and which prints out calculations on a paper tape strip, may be borrowed if the occasion warrants.

The calculators are reasonably sturdy and should survive normal classroom use, other than a hard fall onto a stone floor which might crack the outer case. It is also recommended that the calculators should not be allowed to become wet.

Handling the Calculators:

Although it is possible to use the calculator by holding it in one hand and pressing the keys with the other hand, pupils should be taught to place the calculator flat on the desk and hold it firmly with one hand, while pressing the keys with the other.

Some pupils will prefer to use the eraser end of a pencil to enter data on the calculator. This is an option only if the student's fingers are too large to permit accuracy in pressing the keys; it is best to avoid the small bits of eraser material that may become lodged in the calculator's interior.

Pupils should be taught to use a marker to keep their place when entering lengthy columns of numbers. The matter of accuracy in handling the mathematics is to be emphasized, just as is done with pencil and paper exercises.

Some advanced pupils may be interested in learning to 'touch-type' the keys on the calculator, similar to the way that they can use the computer keyboard from memory without looking at the keys.

Workshop Exercises:

Use the attached worksheets to gain familiarity with the following:

1. Simple addition, subtraction, multiplication, division.
2. Constant (repeat) function
3. Squares and powers
4. Percentages
5. Memory calculations
6. Overflow calculations and errors

Reminders:

Calculators are available for use in Grades 3 - 6. The use of calculators was specifically recommended for pupils in Gates classes.

Calculators may be borrowed on a weekly or semi-weekly basis. You are requested to indicate your intention to use them in your weekly plans, so that they will be reserved for you.

Curriculum and Instruction:

Use calculators in the classroom for:

1. Pre-calculations of classwork, which will later be spot-checked with paper and pencil.
2. Spot checking of classwork which has already been completed with pencil and paper.
3. Quickly determining the variety of ways in which a word problem can be calculated and solved.

4. Solving problems involving very large whole numbers and very small decimal numbers. Pupils will need to be reminded that calculators will not show commas to indicate 'thousands'.

5. Eventually, you should plan to include several calculators in your room for easy access and reference by youngsters, just as you would provide dictionaries or a globe.

P.S.

OCTOBER 27, 1988

E. D. J., PRINCIPAL

A. A. V., ASST. PRINCIPAL

INSTRUCTIONAL TECHNOLOGY WORKSHOP SERIES

4. CLASSROOM MULTI-MEDIA EQUIPMENT

A. OPAQUE PROJECTOR

At one time it was believed that the opaque projector would eventually be in such widespread use that it would replace the chalkboard in every classroom. Although this did not happen, this equipment is now the mainstay of presentations at business and professional conferences, particularly in its state-of-the-art, portable, collapsible, and computer-compatible forms.

In the classroom the projector should be placed on the teacher's desk with the projection screen (use the largest one available) behind the teacher and slightly above shoulder level. This will permit the teacher to face the class while using the equipment, with projected material at a suitable height on the screen for unobstructed viewing by pupils.

Materials: blank acetate sheets or rolls

commercially prepared transparencies

waterproof 'Magic' markers - removable with acetone fluid.

china marking pencils - rub off with dry paper towel

soft or marking crayons - " " " " " "

Posey 'whiteboard' markers - " " " " " " "RECOMMENDED

Techniques - Turn on projector only to project material.

Keep blue-tinted sheet on light pad to reduce glare.

Use masking to reveal sections of transparencies in sequence during a lesson, rather than changing separate pieces.

Projector can be used in auditorium with colorful transparency to project background scene on rear stage wall. Set projector at angle to stage to avoid bright light in actors' eyes.

Leave fan on after turning off light so that bulb will cool gradually. This will reduce chances of sudden bulb burnout during next use of the projector.

B. TAPE RECORDER/PLAYER

Our equipment is best used with the external microphone, rather than the one that is built-in. This helps to focus the speaker's voice and reduce background noise.

Selectivity helps. Curb the impulse to record entire programs. One hour of the first-time live presentation experience may be wonderful; one hour of playback can become tedious.

When using commercial materials, cue the cassette tape to the exact point at which you plan to begin. (Use the 'pause' control on the record player to do the same, particularly when you want to start in the middle of a selection.)

If appropriate, set up the filmstrip projector and screen. Rearrange classroom seating to permit optimum viewing and listening by all students, as well as ease of instruction by teacher while operating the equipment.

Rewind all materials in readiness for next user. Again, leave fan on after turning off the filmstrip projector to permit bulb to cool slowly.

C. RADIO AND PUBLIC ADDRESS SYSTEM

AM/FM broadcasts may be piped directly to designated classrooms throughout the school day. WNYC and WNYE are marked for easy selection. Programs broadcast by the NYC Board of Education are listed in a publication available in the principal's office. These programs are on a wide choice of curriculum subjects and are suitable for designated grade or age levels.

Procedure: Turn on power (select either Channel A or Channel B)

Wait 30 seconds for system to warm up.

Raise volume on monitor to test for clarity.

Turn on radio and tune to desired AM/FM station.

Remember that our office clock may not exactly match radio time. Ask to telephone for correct time if necessary.

Adjust classroom number switch to right or left to match power channel selection.

Reduce monitor volume in office. Return to classroom to listen to selected broadcast.

After program is finished, return to office to turn off system.

OR

Turn on system as noted above.

Turn selector dial to correct number to match area where microphone is to be used (auditorium, principal's office, etc.)

Adjust switch to right or left (matching power channel selection) for area where microphone is to be used.

Adjust volume gain until meter registers just below the red zone.

Set up microphone in designated area using triple-twist-lock outlet.

Use controls in designated area (if available) to adjust volume as needed.

REMINDER

Microphones in our school should be held on a slant so that top end of the microphone is approximately three inches from the speaker's mouth. This will greatly aid in preventing feedback noise and improving clarity.

Again, after using microphone, return to office to turn off the power to the public address system.

P.S.

E.D. J , PRINCIPAL

A.A. V , ASST. PRINCIPAL

EDUCATIONAL TECHNOLOGY WORKSHOP SERIES

#5 - COMPUTERS

On the three pages attached herewith is information on the types of computers and on the Logo language program as taught here in our school. There are also two pages of practice computer material in text and math which you are encouraged to try to work through at a more convenient time. There should be a number of advantages to this which may become apparent to you.

1. You will gain an insight into the learnings which the students in your class now have as a result of their work in the computer lab. Understandings of graphics have led to learnings in math and geometry. Practice with text manipulation have increased their abilities in reading, spelling and writing. And the need to invent specific programming patterns for their computer work has helped students with thinking skills and problem solving.
2. We have on hand a number of high-interest interactive programs such as the "Voyage of the MIMI" materials. Teachers should be aware that with the formation of computer special interest groups or clubs within the school, pupils who become interested in working through these types of programs will be spending a good amount of time away from the classroom, but will be gaining as much or more skills in the higher level thinking skills (analysis, evaluation, and synthesis) as they become proficient in solving the frequently complicated and intriguing problems presented in these programs.
3. We have the advantage of the Macmillan computer materials in this school and we have been using them for generating the unit tests and results for students as recommended in the guides for the series.

There is also the opportunity for teachers also to prepare their own customized testing materials, not only in reading, but in other subject areas as well. In order to do this, however, the following procedures need to be

addressed:

- a. What is overall goal of the test?
- b. What is the specific objective to be met by each item on the test?
- c. What is the best question that can be designed to test whether or not the student has met the specific test item objective?

This workshop will enable us as a faculty to begin to study these questions, and eventually to design our own high-quality test materials for all curriculum areas and for all grades.

F. W. W. SCHOOL
P.S.
E. D. J. , PRINCIPAL

PREPARED BY:
A. A. V
ASSISTANT PRINCIPAL

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COMPUTER ROOM NEWS

INFORMATION FOR ALL FACULTY, PARENTS, AND PUPILS OF OUR SCHOOL

BULLETIN #1

WHAT ARE THE RESOURCES OF OUR COMPUTER LABORATORY?

1. COMPUTERS--Most people are surprised to learn that the computers are really composed of a set of very small 'chips'. These delicate chips are soldered onto a board and placed into a hard plastic protective case. In our computer lab there are three types of computers: Apple IIe, Atari 800, and IBM PC Jr. When you visit our lab, ask to see the chips inside one of the Apple IIe's.
2. MONITORS--The monitors have screens like television sets, but they cannot receive a signal from any transmitter, so we cannot see TV shows on them. There are a variety of monitors but all of ours can show computer pictures in color. When you visit, we have programs which demonstrate the 5 Apple colors, the 15 IBM colors, and the 127 Atari colors!
3. KEYBOARDS--Information (or data) is put into the memory of the computer by typing it in on the keyboard. Most of our keyboards are attached to the same hard plastic case with the computer; however, the IBM keyboards are separate. All of our keyboards are like typewriters. There are programs in our own computer library which can help adults and children to improve in keyboarding skills for using a typewriter or a computer.
4. DISK DRIVES We have an extensive collection of instructional programs which are stored on 5 1/4 inch diskettes. These, as well as diskettes which are prepared for personal use, hold information which can be read into computer memory from the disk drives. The Atari computers can read information from diskettes in disk drives, or from cartridges placed into slots on the computer itself. The IBMs can also accept either cartridges or diskettes. LOGO on disk or cartridge is used every day in our computer lab.
5. PRINTERS---Any class worksheet, parent or faculty newsletter, report, banner or bulletin can be prepared and printed out in our computer lab.

R W W SCHOOL
P.S.
E D. J. , PRINCIPAL

PREPARED BY:
A. A. V.
ASSISTANT PRINCIPAL

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COMPUTER ROOM NEWS

INFORMATION FOR ALL FACULTY, PARENTS, AND PUPILS OF OUR SCHOOL COMMUNITY

BULLETIN #2

WHY DO WE TEACH PUPILS THE LOGO COMPUTING LANGUAGE?

GRAPHICS---Young children are attracted to information presented to them in interesting picture or graphic form. Logo permits children (and adults!) to use ordinary language to write commands in a structured format in order to design and display as wide a variety of shapes and colors and pictures as they wish.

TEXT-----From using the letters and numbers on the keyboard to type in commands, to using the printer to display their programs in print, Logo can help to improve the reading and writing skills of anyone who learns to use it. Both younger and older children enjoy combining text and pictures in their inventions of Logo stories and games. We support the belief that pupils who learn to program in Logo at an early age will have little difficulty in high school with learning to program in Pascal, or in Cobol--both are computing languages used in business.

MATH-----Turtle graphics help pupils to learn to use principles of geometry in designing patterns and pictures with geometric shapes. Also, children use a variety of software on diskettes to improve their basic number facts in addition and subtraction; older students practice math in multiplication and division and in solving word problems. All of this work can be done also using the Logo language.

SOUND-----Pupils have become accustomed to the many sounds (beeps, chirps, etc.) that are part of some of the more interesting software programs. Logo can also be used to write programs with these sounds as well as with musical tones and even songs!

ANIMATION Some of the most popular programs enjoyed in the computer room involve moving 'characters and pictures. Once students (usually in the upper grades) discover the Logo techniques for animating their pictures, their work becomes even more lively and colorful.

SUMMARY---Each type of computer offers its own special features; Atari has four 'turtles' and many colors, Apple has 'sprites' for extra animation, and the IBMs have very fine music and sound capability. Children can advance in reading and math as well as enjoying the additional interest of music and color in their computer work.

APPENDIX T
SUMMARY OF WORKSHOP EVALUATIONS

SUMMARY: WORKSHOP EVALUATIONS

GRADE	FAVORABLE	NEUTRAL/SUGGESTIONS	UNFAVORABLE
3	Calculator work-sheets were helpful	List recommended VCR tapes	Too much warning about VCR copy-rights
4	Computer tests for basal reading series are good	Need to review procedure for off-air VCR taping Divide large group into smaller units to give more people chance to practice	Too many participants
5	Clear directions 'Coaching' by other participants		
CLUSTER			Too much advance time needed to reserve VCR More space needed for practice

APPENDIX U
SAMPLE OBSERVATION LESSON PLANS

Lesson Plan
 Teacher: Date: Time: 10:20
 Class: 4 Room: 3
 Lesson Topic: L.S. M.S. Saying what you mean.
 Speaking Effectively
 Curriculum Area: Language Arts

Aims: To demonstrate improved speaking skills
 To learn how variations in voice convey
 feelings and special meanings

Behavioural Objectives: Students will be able to
 recognize and identify variations in voice.
 They will be able to state the qualities in voices
 that make our emotions evident. They will
 be able to speak and interpret messages
 effectively.

Materials and Equipment:
 L.S. M.S. Manual - Tape Recorder -

Development:

A) Motivation - Refer to children's experiences
 How many children listen to radio? Compare
 T.V. (non-visual)

Pivotal Questions:

What is your favorite program?
 Why would you prefer listening to one
 disc jockey or speaker rather than another

B) Pupil Participation - Have children respond.
 Talk about forms of communication where
 you don't see person. (teleph, tape r, radio)

Question:

Why is it important to say exactly what
 you mean on tape? (Can't see expressions) phon.
 (Same reason)

C) Medial Summary - You can now see how
 important your voice is in communicating
 especially when a person can't see your
 expressions

D) Practice and Application of Learning -
 Repeat the same sentence different ways
 varying the volume, rate and quality.
 "You did it again." angry.

Regretful
 Proud

to) ~~fastension~~, and ~~to~~ enrichment -
 Go on to explain varying interpretations
 Divide the class into small groups
 and give each group a written
 sentence on a strip of paper. Direct
 children to read the sentences to each
 other. Tell the other children in each
 group to listen and identify the
 intended meanings. After the group
 have read and record different ways
 of saying "That's my ball," -

Final Questions:
 Ask children to identify feeling and
 message of the speaker. (sequence)
 What do think he meant?
 R. ? L. ? How do you know?
 Was I telling us the same thing?
 (He was c)

Final Summary -
 We can use our voices in different
 ways to express feeling - it helps
 us understand messages.

to valuation: to establish criteria for
 tapes, and reading aloud - We will
 discuss and identify positive and
 negatives

1. Assignment -
 Record favorite stories, poems. Share
 with other classes. - teach speech lessons
 teach use of telephone

Planned Follow-up Lesson Activities:
 Classification of Voice Qualities (C. S. N. S.
 Volume (loud, soft) Rate (fast, slow) Pitch (high, low)
 Quality (Pleasant, gentle, unpleasant)

Small group - (aloud - or with tapes)
 Good from basal w. trade book -
 Use voice to convey meaning
 to evaluate Volume, Pitch, Tone, rate

Note: Please prepare a copy of your completed lesson plan for the use of your supervisor during the observation of your lesson. Your planbook should also be available for inspection. *See* 143

Lesson Plan

Date: _____ Time: 9:00
Teacher: Mrs. P. Class: 5- Room: 3
Lesson Topic: To find range and mean of a given set of numerical data Curriculum Area: Math

Aim(s):

To find the range and mean of a given set of numerical data.

Behavioral Objective(s):

The student will be able to first, find the range of the given problem. Then find the means using a calculator.

Materials and Equipment:

Math sheet

Calculator

Development:

Pivotal Questions:

- A) Motivation- How many of you have used a calculator before? What is the first step in using a calculator?
B) Pupil Participation- do we use a calculator for? How do we find the range of a given set of numbers?
C) Medial Summary- To use a calculator to solve math problems to find range and mean
D) Practice and Application of Learnings- Student will be able to use the calculator to solve problems in addition and division. What do we do to find the means?
E) Extension and Enrichment- children will make-up their own numerical data and find the range
F) Final Summary- and means
G) Evaluation- Explain in words how we arrived at our range and mean. Why is it necessary to use a calculator sometimes when doing math? How will using the calculator be of value to you?
H) Assignment- Children will use the calculator to solve division problem.
Planned follow-up Lessons or Activities: Use the calculator to solve problems in division and multiplication.
Other comments (grouping arrangements, etc.):

This is the fifth grade.

Note: Please prepare a copy of your completed lesson plan for the use of your supervisor during the observation of your lesson. Your planbook should also be available for inspection. *AW*

Lesson Plan

Teacher: P Date: _____ Time: _____
Class: 4 Room: 3

Lesson Topic: Map Skills Curriculum Area: Social

Aim(s): To review Cardinal and intermediate directions *Striches*
of North America, To recognize standard symbols *using map*
Capitals and state and national boundaries. To show state and national
Behavioral Objective(s): bordering nations, to locate the U.S. and
Cardinal directions to describe the relative locations of states/nations
Materials and Equipment: Overhead projector, transparencies.

Development:

- A) Motivation- Political maps show boundaries between states & nations. They also show towns and cities. The map on pp. 10-11 is a political map.
B) Pupil Participation-
C) Medial Summary-

D) Practice and Application of Learnings-
Use pp. 10-11 from SS Text

E) Extension and Enrichment-

F) Final Summary-

- G) Evaluation- What 5 states have a boundary on Gulf of Mexico? What are 5 states that border Canada? What 4 states border Mexico?
H) Assignment-

Planned Follow-up Lessons or Activities:
Use 2 worksheets to identify states and their capitals. Also states that border, border with or countries using Political Map of USA
Other comments (grouping arrangements, etc.):

Pivotal Questions:

- (What is the National Capital of the U.S.) What symbol is used for National Capital?
- State capitals?
- What type of boundary line separates Alaska from the other states?
- What is state capital of NY?
- How is symbol for international boundaries different from symbol for state boundaries?
- What is largest state bordering NY in the south? What 2 lakes are part of NY State's western border?
- What country borders NY on the north?

APPENDIX V

SAMPLE POST-OBSERVATION EVALUATORY LETTER



To: _____, Teacher of Class/Cluster _____
From: _____, Assistant Principal
Date: _____ Re: Formal Observation of Lesson

It was a pleasure for me to observe your Language Arts lesson with Class 4 - on Tuesday, _____, at 10:20 a.m. in Room _____. The aim of the lesson as noted in your lesson plan was twofold: a) to demonstrate improved speaking skills, and b) to learn how variations in voice convey feelings and special meanings. In our post-observation conference on Wednesday, _____, we discussed and agreed on the following:

Strengths of the Lesson

1. The aim of the lesson was realized in that all pupils were able to identify and contribute examples of vocal variations in volume, pitch, tone, and rate depicting varying moods, feelings, and emotions.

2. Your use of the tape recorder and microphone was an appropriate methodology for vitalizing the lesson and contributed to enhancing the instruction points of the lesson for your students.

3. You appropriately provided for small group and individualized instruction during the lesson, as well as for whole-class activities. The lesson was introduced and explained to the entire class at the beginning of the lesson; then pupils were directed to participate in assigned group practice activities. This was followed by your selecting individuals to tape record various messages, which were then discussed and analyzed for informational and emotional content.

Recommendations

1. Your lesson would have been improved by better techniques in questioning. Inadequate pivotal questions noted in your written lesson plan included, "What do you think N_____ meant? How do you know? Was S_____ telling us the same thing?" A better choice of pivotal questions would have been, "Why should we try to improve the quality of our speech? What have we learned in this lesson (that we did not know before) about how we speak? What else can we do to learn more about how to improve our speaking habits?"

2. Background noise and unnecessary pauses on the tape could have been avoided by instructing contributing individuals to first gather in a group close to the microphone before starting to record.

You are to be commended on your presentation of this successful and satisfactory lesson, and on your interest in improving your own professional skills and instructional methodology.

APPENDIX W
SHORT RANGE PLANNING FORM

P.S.

E. D. J , Principal

A. A. V , Asst. Principal

SHORT RANGE PLANS

Teacher _____

Class/Cluster _____

Subject Area

Methodology

Month of _____

Week 1

Week 2

Week 3

Week 4

Reading

Teacher/Text

and

Technology

Communication

Consultants

Arts

Interclass

Mathematics

Teacher/Test

Technology

Consultants

Interclass

Social

Teacher/Text

Studies

Technology

Consultants

Interclass

Science

Teacher/Text

Technology

Consultants

Interclass

Other

Teacher/Text

Technology

Consultants

Interclass

APPENDIX X
FACULTY MEETING AGENDA

FACULTY/GRADE CONFERENCE

DATE:

TIME:

ROOM:

AGENDA

1. ANNOUNCEMENTS

2. OLD BUSINESS - Please note that Short Range plans are still due to supervisor from Mr. , and Mrs. .

3. NEW BUSINESS - Circulation schedule for new classroom science materials, now on display in Room 3 :

Grade 3: All of February

Grade 4: All of March

Grade 5: First two weeks in April

Grade 6: Last two weeks in April

Grade 4: All of May: NYS test review

4. MINI-WORKSHOP - a. Presentation of new poetry software for use with computers (haiku, diamante, etc.)

b. Hands-on Calculators: using calculators to teach negative numbers, e.g. $3 - 7 = -4$ (may also be displayed at 4-, depending on calculator model).

5. LONG RANGE PLANS- Distributed and explained. May be used as a checklist now, and completed in more detail by the start of the new term. Please return to supervisor's letterbox as soon as possible. Additions and revision may be made to this form at your option.

Attachment: Long Range Planning Form

(Attachment to Agenda)

P.S.

E. D. J , Principal

A. A. V , Asst. Principal

LONG RANGE PLANS

Teacher _____ Date From: _____ Class/Cluster _____ To: _____

Subject Area Methodology Month:___ Month:___ Month:___ Month:___

Reading Teacher/Text

and Technology

Communication Consultants

Arts Interclass

Mathematics Teacher/Test

Technology

Consultants

Interclass

Social Teacher/Text

Studies Technology

Consultants

Interclass

Science Teacher/Text

Technology

Consultants

Interclass

Other Teacher/Text

Technology

Consultants

Interclass